SPECIAL ISSUE

Two million Americans have lost their livelihood to foreign competition since 1956. And world trade shifts have cost U. S. industry more than $4 billion in sales. Spurred by rapid expansion and lower wages, foreigners have been particularly successful in taking markets once held by U. S. metalworking. STEEL is devoting this issue to show how we can counterattack.

STEEL

The Metalworking Weekly

SEPTEMBER 5, 1960

A PENTON PUBLICATION

Our Fight for Survival in New World Market

CONTENTS—TURN PAGE

Automatic Bull Block

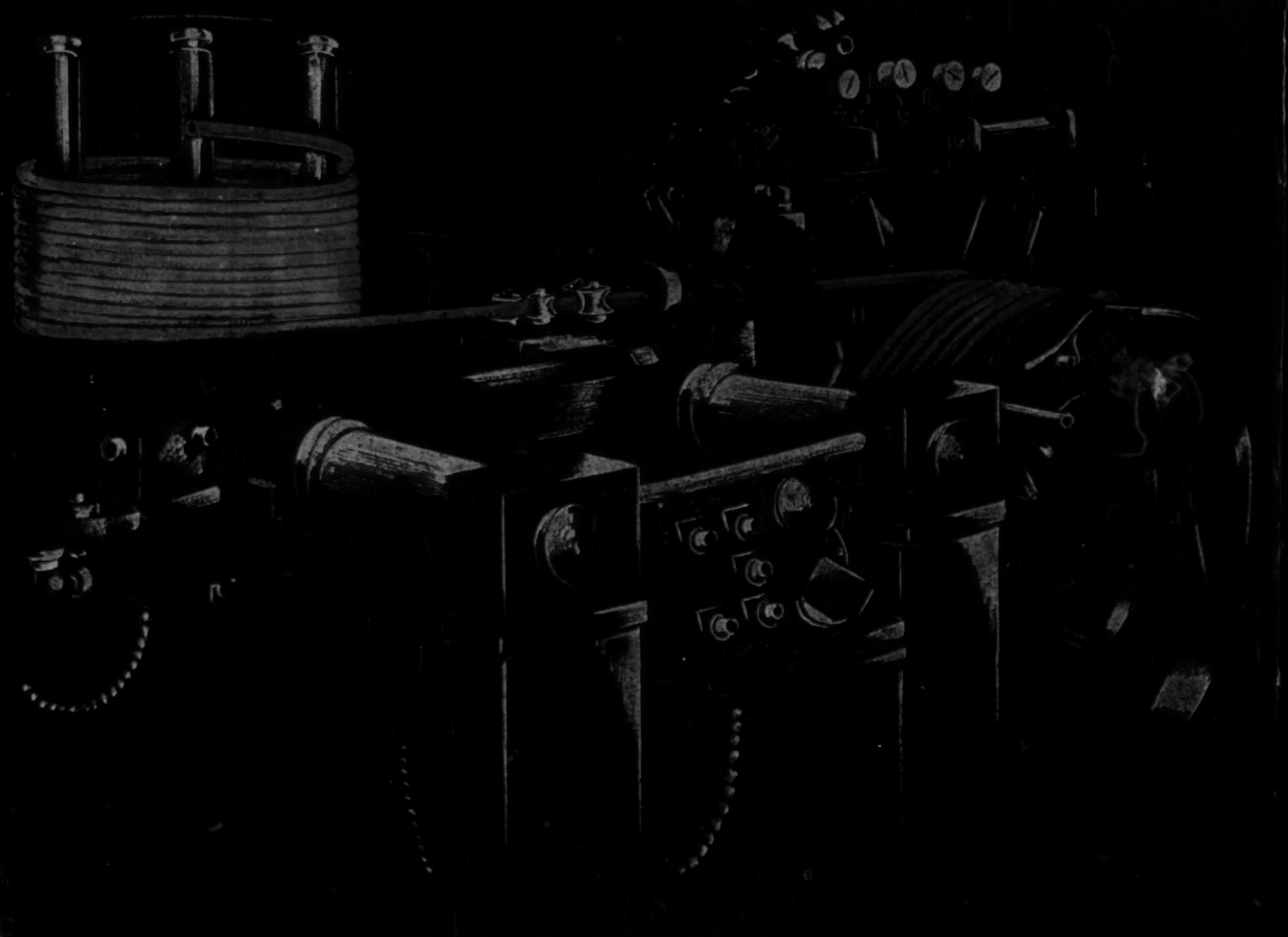
for copper

Place coil in tray and feed point into die. Press the button, that's all. This Automatic Bull Block does the rest. Finished tubing emerges. Features include Automatic Gripping, Automatic Grip Release, Heavy Traverse Feed.

This is a 36" Bull Block drawing down copper from 5/8" to 1/8" at high speeds.

The Automatic Bull Block can be furnished in all sizes up to 84" diameter. Producing long lengths at high speeds automatically really brings down those costs. For complete information on the Block or any other Cold Draw equipment for tubes, bars, or shapes, write to: Cold Draw, Aetna-Standard Division, Blaw-Knox Company, Pittsburgh 30, Pennsylvania.

Aetna-Standard Division
BLAW-KNOX



This Week in STEEL

The Metalworking Weekly

September 5, 1960 Vol. 147 No. 10

Our Squander of the World Market

Foreign manufacturers, with price advantages, experience in international trade, and aggressiveness, have seized chunks of many U. S. markets—600,000 autos, 4.4 million tons of steel, even wire to stitch the *Congressional Record* were imported last year. Yet many U. S. manufacturers think we're still supreme in the industrial arena. PAGE 37

Our Competitors Build Their Muscles

The new world market has arisen because our employment costs are up to five times higher than those of our major competitors and because those competitors have increasing capacity to supply markets once held by Americans. Between 1953 and 1959, production rose 14 per cent in the U. S., but 120 per cent in Japan, 65 per cent in West Germany, 24 per cent in Britain. PAGES 27, 47

Our Government's Trade Policies Obsolete

A majority of 200 industrialists queried by STEEL feels that the weapons Washington is providing industry to fight today's foreign trade war are "as obsolete as the Wright brothers' airplane," to quote a New England manufacturer. The executives seek intelligent aid consistent with their emphasis on self-help. PAGE 44

Our Changed Auto Status

Americans will buy 2 million foreign cars in the five years ending Dec. 31, 1964. They haven't bought that many in the entire time autos have been marketed. That size trade loss means $3.7 billion lost in automaker sales, 374 million manhours lost to U. S. autoworkers, $1 billion lost in wages, 3.5 million tons lost in domestic steel use. PAGE 53

VOLKSWAGEN

Our Dilemma: How Economists See It

"The impact of foreign competition on our economy is still small in relation to what is in prospect in coming years," predicts one member of STEEL's 54-man Panel of Economic Consultants. PAGE 57

Our Dilemma: How Presidents See It

Top management is growing increasingly concerned about the threat of foreign competition. Most are critical of our competitive performance here and abroad. Few favor higher tariffs, but most want U. S. help in giving more liberal credit and granting depreciation reform. PAGE 61

Our Strategy for Survival

How can you insure survival in the new world market? 1. Plan on a world-wide basis. 2. Analyze your industry and markets. 3. Audit your resources. 4. Determine how you can improve your competitive position in the world. Then follow through. A counterattack is worthwhile because the potential is terrific. In the next ten years, the Free World's population will jump 20 per cent, and its national output will soar more than 50 per cent. PAGE 69

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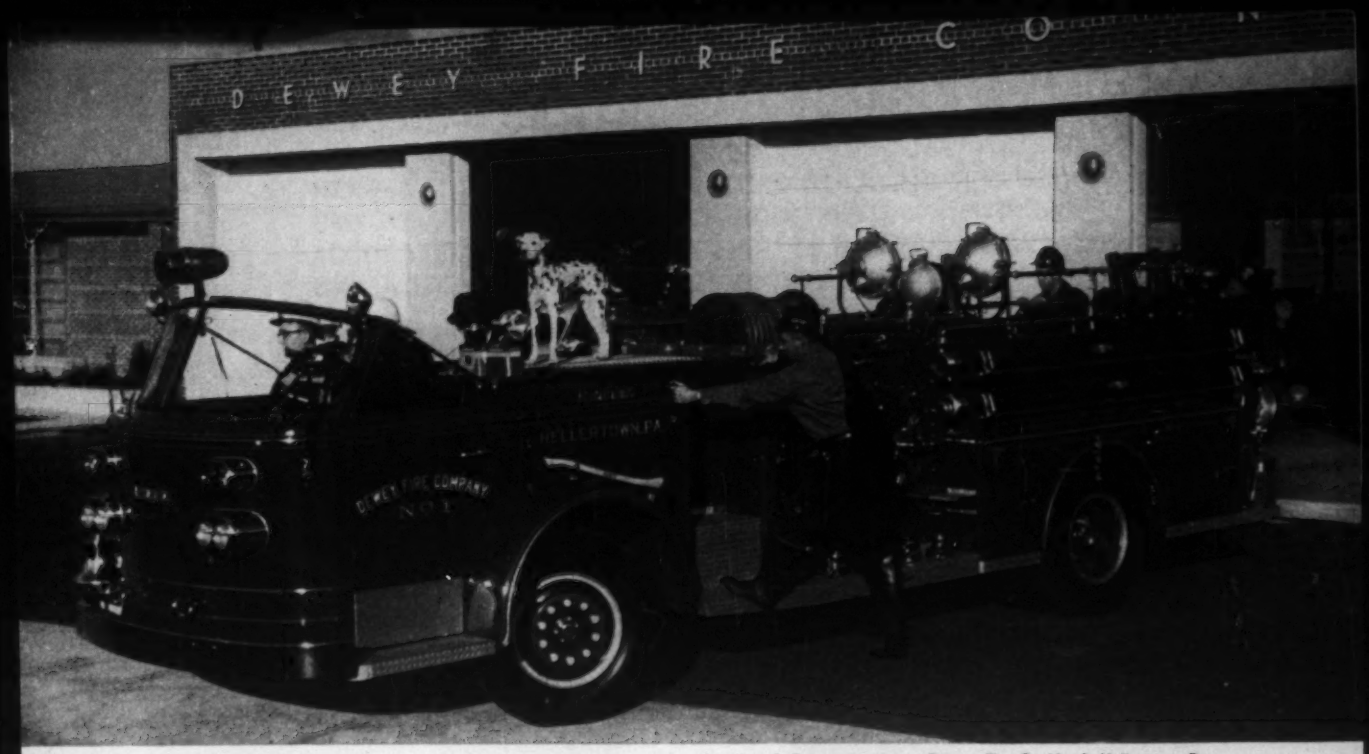


American-LaFrance pumper at Dewey Fire Co. No. 1, Hellertown, Pa.

Sheet Steel to the Rescue!

Who doesn't thrill to the flashing color and competent power of a modern fire engine roaring by on its errand of mercy?

Hard-working trucks like these need husky steel to safely haul their cargo of men and fire-fighting machinery. Bethlehem supplies hot-rolled and cold-rolled sheets to most of the makers of fire apparatus and fire-protection equipment.

If your product involves sheet metal, steel is the material with which to design and work. You can always count on Bethlehem sheet steel for top quality. Our engineers will be glad to work with you.

Steel

For strength
... economy
... versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

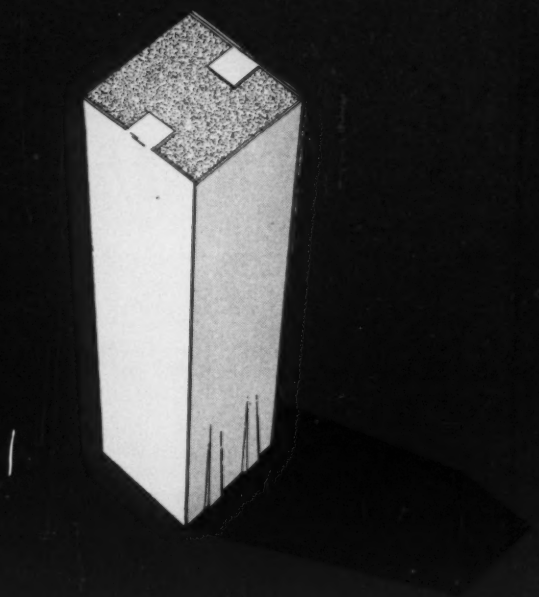
BETHLEHEM STEEL

BETHLEHEM STEEL

Mack C95F pumper for City of Lapeer, Mich.

THIS IS LAVINO'S FERROBOND® CMX 3x3" ROOF KEY

A NEW BASIC OPEN-HEARTH ROOF BRICK WITHOUT INTERNAL PLATES, DESIGNED BY LAVINO FOR MAXIMUM SERVICE AND ECONOMY



Every split-roof service test, comparing Lavino Ferrobond CMX 3x3" Roof Keys with internally-plated brick, has shown it to be equal or superior in service life. *In addition, an approximate 8% savings will be realized in material costs whenever a 12" or thicker roof is installed with Ferrobond CMX 3x3" Roof Keys.**

*PATENT PENDING

HERE IS THE PERFORMANCE RECORD OF LAVINO FERROBOND CMX 3x3" ROOF KEYS IN SPLIT ROOF TESTS . . . THE MOST ACCURATE AND IMPARTIAL METHOD OF COMPARING BRANDS UNDER IDENTICAL OPERATING CONDITIONS.

The graphs below represent plan views of five open hearth furnace roofs. The blue halves were constructed with Ferrobond CMX 3x3" roof keys, the yellow halves with internally plated 4½x3" basic roof keys. Grey tones indicate where patching was required and the areas in white outline show where the hole developed, terminating the campaign.

SPLIT ROOF TEST "A"

190 ton furnace, 284 heat campaign
construction: 12" ribs 9" valleys
percentage of area patched:

FERROBOND CMX 3x3" ROOF KEYS	1.0%
INTERNALLY PLATED ROOF KEYS	1.6%

SPLIT ROOF TEST "B"

290 ton furnace, 453 heat campaign
construction: 15" ribs, 12" valleys
percentage of area patched:

FERROBOND CMX 3x3" ROOF KEYS	10.4%
INTERNALLY PLATED ROOF KEYS	19.0%

SPLIT ROOF TEST "C"

200 ton furnace, 488 heat campaign
construction: 15" ribs 12" valleys
percentage of area patched:

FERROBOND CMX 3x3" ROOF KEYS	2.8%
INTERNALLY PLATED ROOF KEYS	6.6%

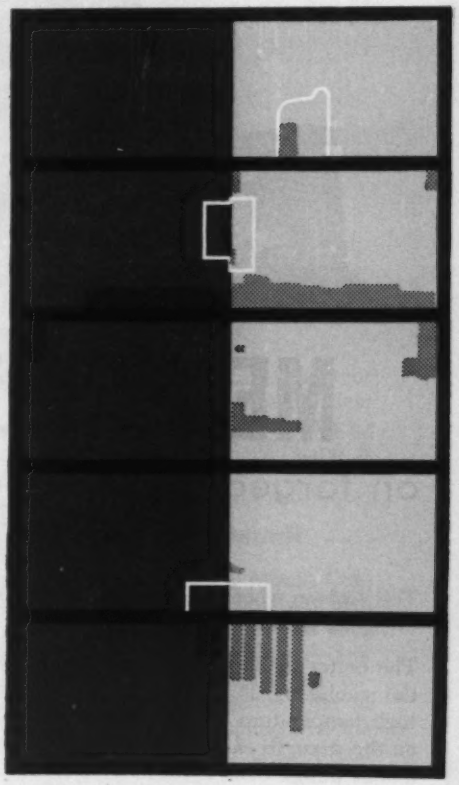
SPLIT ROOF TEST "D"

400 ton furnace, 298 heat campaign
construction: 15" ribs 12" valleys
NO PATCHING

SPLIT ROOF TEST "E"

190 ton furnace, 250 heat campaign
construction: 12" ribs 9" valleys
percentage of area patched:

FERROBOND CMX 3x3" ROOF KEYS	2.2%
INTERNALLY PLATED ROOF KEYS	12.6%



In every split roof installation of Ferrobond CMX 3x3" roof keys, they have been compared with internally plated brands of other manufacturers . . . in each case they have proven equal or superior to these brands from a service standpoint . . . coupled with their economy and ease of installation, Ferrobond CMX 3x3" roof keys emerge as today's outstanding value in basic roof brick.

E. J. LAVINO
and company

REFRACTORIES DIVISION SALES OFFICES:

PHILADELPHIA • PITTSBURGH • CHICAGO

Your company is being contacted by Lavino representatives with details of our basic roof proposals.

MEL-TROL® gives you **design insurance**

on forged high temperature parts

This turbine wheel forging will be machined down to $\frac{1}{16}$ in. thickness in some sections.

The better the forgeability, the easier and less costly the machining. But there can be no sacrifice of high temperature properties when you are depending on the strength of a minimum cross section, as this design does.

The only way to get both forgeability and uniform high temperature performance is to make sure of the uniformity and quality of the steel itself. To get a uniform forging, you have to start with a uniform billet. And a uniform billet can only come from a uniform ingot.

That's what MEL-TROL gives you.

Users of MEL-TROL high temperature alloys report they are the cleanest forging alloys of their type. Their performance in service is consistently good. It minimizes the variations in service life found in conventional alloys.

It's the result of the finest quality control tools and procedures known today used together with a new, *Carpenter*-patented mold which produces ingots with the highest uniformity yet achieved in commercial steelmaking.

And it's easy to get this new kind of "design insurance." Just call the nearest *Carpenter* Service-Center. The Carpenter Steel Company, 139 W. Bern Street, Reading, Pa.

Steel

Carpenter **steel**

The Carpenter Steel Company, Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.

We Present Our June Winner

Close reading and creative thinking, combined with action, won the June Usership awards for J. W. Wilcock (above) division manager, Sturtevant Div., Westinghouse Electric Corp., Hyde Park, Mass. A $500 check, an Honorary Editor card (No. 8), and a stainless steel commemorative plaque became his after the editor-judges read this entry:

"The article 'Ceramic Prolongs Muffler Life,' in your June 6 Mirrors of Motordom column, has prompted (us to make) an immediate investigation with the Bettinger Corp. on the possible application of ceramic coatings to our industrial fans and blowers.

"For many years, we have had the difficult task of supplying fans for all types of corrosive industrial applications: Pickling tank exhausts, textile mill processes, chemical plant fume exhausts, and so forth. We currently publish a comprehensive book on the problems of selecting one of dozens of coatings ranging from special paints through air-dried Heresite and even synthetic rubber.

"Preparation of the fan interior requires weld grinding, sandblasting, and other laborious processes. Once applied, various coatings have an effective life of only one to five years, depending on the application. The entire manufacture of the fan is complicated by existing coatings due to fan wheel balancing, casing erection, and the extreme handling care necessary to prevent puncture of the coatings.

"Since Bettinger is geographically close to our operation, we immediatelv sent over two fan casings for test coating. These fans will be ultimately tested by a large auto company in paint spray booth exhaust. We feel the coating may greatly facilitate the cleaning of the fan that is frequently necessary.

"If this development is successful, we expect to pioneer the first simplification in fan corrosion protection in many years. The adoption of this technique will considerably reduce a coated fan's cost and provide the user with an upgraded product of increased life.

"We have previously given routine consideration to ceramic coating, but this article has prompted an immediate and thorough evaluation. Its technical descriptive content made us realize that if muffler coating is feasible, fan coating should be equally so."

Desk Lighters . . .

. . . suitably engraved, were corralled by four entrants in the contest. The honorable mention winners are: J. J. Gallagher Jr., Industrial Engineering Dept., Carpenter Steel of New England Inc., Bridgeport, Conn.; P. B. Hart, raw material agent, Montreal, Que.; A. L. Lauer, director of education and training, Saginaw Steering Gear Div., General Motors Corp., Saginaw, Mich.; George Mannbeck, district salesman, Williams & Co., Cleveland.

You Can Win $1000 This Month . . .

. . . In STEEL's Usership Idea of the Month Contest. Tell us, in 300 words or less, how you plan to USE an article or advertisement in this issue (or any other issue published this month—September, 1960) to help you accomplish an important personal or company objective. Be as specific as you can. If, in the opinion of the judges, yours is the best idea submitted—**you will win $500.**

There's more . . . you will win an additional $500 if you furnish written proof that you accomplished your objective. Proof must be submitted within six months after you are declared winner of STEEL's Usership Idea of the Month Award.

You may enter as many times as you wish. Please identify your letters as Usership entries. They will be judged by a committee of STEEL's editors. All letters become STEEL's property.

Send your entries to me, Ed Service, Servicenter, STEEL, 1213 W. Third St., Cleveland 13, Ohio. **Deadline for this month's contest is Nov. 1.**

The World's Largest Mine . . .

. . . the ocean, contains large reserves of iron, uranium, and other minerals. At last there's interest in getting to those deposits. STEEL's

"the HITCHINER way..."

saves 35 MACHINING OPERATIONS with INVESTMENT CASTING

This barrel of a .22 caliber target revolver is now being cast by Hitchiner's new ceramic shell process. This new investment casting technique provides sufficient close tolerances and finishes to eliminate the need for 35 machining operations. Gun barrel tolerance of 0.006 inch was normal, but plus over minus 0.001 inch was maintained on certain areas. Only external finishing needed was partial polishing.

These savings have allowed the manufacturer of this revolver to sell it for considerably less than a similar previous model.

Through investment casting, parts can be designed for function and maximum operating efficiency with the widest selection of alloys from which to choose. This freedom from manufacturing problems can result in more flexibility in design and less waste in production.

Send us a sample or blueprint and check your specific problem with our "engineered quotation" — no obligation, of course.

Find out how our new ceramic shell technique can possibly benefit you. Send for our free, new revised brochure explaining investment castings.

HITCHINER
MANUFACTURING COMPANY INC.
MILFORD 35, NEW HAMPSHIRE

Coast to Coast Engineering Representatives

Washington editor, Jack Botzum, covers the venture next week.

Within the next decade, the government will spend billions on antisubmarine and oceanographic work. The payoff: Procurement contracts for military equipment and new knowledge, which could open a frontier that covers nearly three quarters of the globe's surface.

If You're Going . . .

. . . to the machine tool shows in Chicago be sure to stop in at The Penton Publishing Co.'s booth (1509) at the International Amphitheatre. Many of STEEL's editors will be on hand to chat with you.

"Why Devote an Entire Issue . . .

. . . to foreign competition?" asked one reader after he perused last week's Servicenter. "We've got plenty of problems at home without seeking them abroad," he concluded. The editors think that question requires many answers. Industries are losing business, workers are losing jobs, markets are vanishing; all those, and other reasons are explored between the covers of this special issue.

Evidence from New England

Workers are vitally concerned about the ramifications of foreign competition. In the hundreds of requests for copies of Editor Walt Campbell's Congressional testimony on the impact of foreign competition (STEEL, May 2, p. 23), there was one from the brassworkers union asking for reprint rights. Permission was granted and tabloid size papers, featuring Editor Campbell's words, were distributed at the union's Aug. 29 meeting in Hartford, Conn.

Indians Seek Aid

Within the last few months, the Servicenter has received a number of technical inquiries from metalworking managers in India. One wanted a horsepower formula for a forming operation, and another sought opinions on the design and metallurgy of a bearingshaft used in mining machinery.

The thoroughness of the inquiries impressed our editors. Blueprints, reports, photomicrographs, and, in short, everything (except experience) needed to make an analysis and issue a report.

If You Can't Keep . . .

. . . this copy of STEEL, orders are being taken by our Reprint Department for reproductions of the entire editorial section. The price is $2 a copy. (Prices for greater quantities are available on request.)

... Fluid Power news

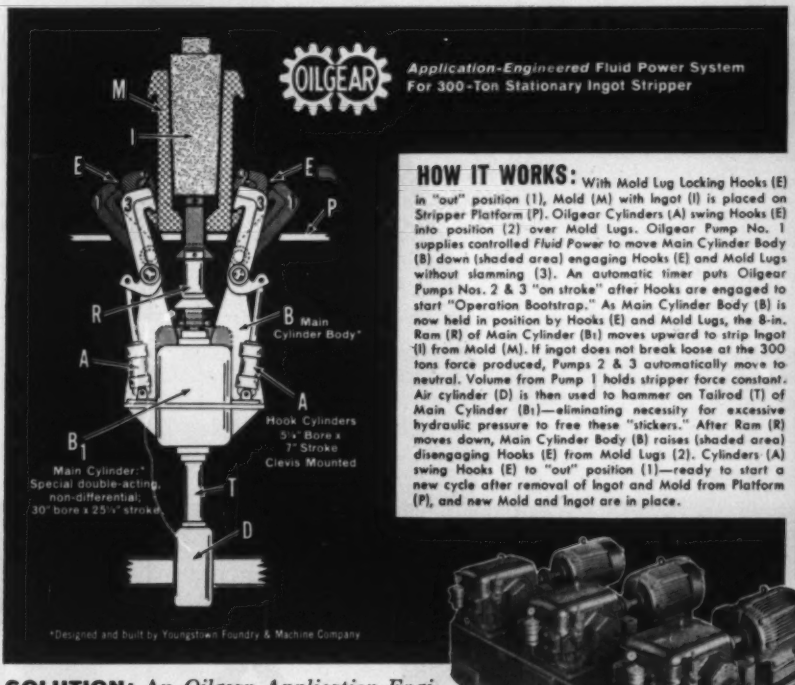
REPORT NO. 11,804 OILGEAR POWERED INGOT STRIPPER

From Oilgear *Application-Engineering* Files

HOW OILGEAR HEAVY-DUTY SYSTEM SIMPLIFIES POWER AND CONTROL OF 300-TON STATIONARY INGOT STRIPPER—HELPS ELIMINATE MAINTENANCE DOWNTIME

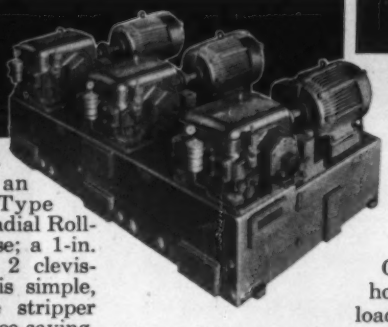
DATA: To replace a mechanical-type ingot stripper because of considerable maintenance downtime caused by dirt and foreign particles jamming the motor-driven ram screw—necessitating disassembly of the entire mechanism to free the threads. A hydraulically-powered, floor-mounted stripper design was approved as most convenient for the big-end-up molds used in this particular operation—would provide faster, easier maintenance accessibility at lowest over-all initial replacement cost.

Basic Power and Control Requirements: 1. Simplicity, and trouble-free, rugged dependability. 2. To be capable of many years of heavy-duty, rapid, 'round-the-clock operation with an absolute minimum of maintenance. 3. Must be: impervious to sand, scale, heat; compact; thrifty on electrical power input, wiring, installation downtime, floor space; completely free, if possible, from maintenance-provoking belts, chains, relays. 4. One source and responsibility for power and control systems preferred.



HOW IT WORKS: With Mold Lug Locking Hooks (E) in "out" position (1), Mold (M) with Ingot (I) is placed on Stripper Platform (P). Oilgear Cylinders (A) swing Hooks (E) into position (2) over Mold Lugs. Oilgear Pump No. 1 supplies controlled *Fluid Power* to move Main Cylinder Body (B) down (shaded area) engaging Hooks (E) and Mold Lugs without slamming (3). An automatic timer puts Oilgear Pumps Nos. 2 & 3 "on stroke" after Hooks are engaged to start "Operation Bootstrap." As Main Cylinder Body (B) is now held in position by Hooks (E) and Mold Lugs, the 8-in. Ram (R) of Main Cylinder (B_1) moves upward to strip Ingot (I) from Mold (M). If ingot does not break loose at the 300 tons force produced, Pumps 2 & 3 automatically move to neutral. Volume from Pump 1 holds stripper force constant. Air cylinder (D) is then used to hammer on Tailrod (T) of Main Cylinder (B_1)—eliminating necessity for excessive hydraulic pressure to free these "stickers." After Ram (R) moves down, Main Cylinder Body (B) raises (shaded area) disengaging Hooks (E) from Mold Lugs (2). Cylinders (A) swing Hooks (E) to "out" position (1)—ready to start a new cycle after removal of Ingot and Mold from Platform (P), and new Mold and Ingot are in place.

ABOVE: Oilgear-equipped Ingot Stripper "in action"—Mold Lug Locking Hooks (E) indicated. A 10,000-lb. ingot has just been "stripped" from the mold. Hooks (E) will be disengaged as soon as stripper ram is retracted.



LEFT: Oilgear Heavy-Duty "Power-Pak"—consisting of 3 Oilgear Type "DX-60" Variable Displacement, Two-Way Pumps on a single reservoir base used on this installation—is remotely located, isolated from heat and gritty particles present in the stripping area.

SOLUTION: An *Oilgear Application-Engineered Heavy-Duty System* consisting of an Oilgear "*Power-Pak*" incorporating 3 Type "DX-60" Variable Displacement, 2-Way, Radial Rolling Piston Pumps on a single reservoir base; a 1-in. solenoid-pilot-operated 4-Way Valve; and 2 clevis-mounted Hook Cylinders (A, above). This simple, direct-acting, locked-circuit, push-up-type stripper with remote speed and cycle control . . . space-saving, remotely located "*Power-Paks*" . . . automatic pressure and flood lubrication with continuously filtered power fluid . . . positive, automatic overload protection—has eliminated maintenance downtime problems encountered with the previous mechanical stripper. Long life for continuous, 'round-the-clock production is assured by this automatic, "*Sealed-System*"—aided by the direct application of the pneumatic jarring cylinder to free "frozen" ingots. Lower installation cost, faster—easier accessibility for preventive maintenance are but two additional advantages of this Oilgear-equipped ingot stripper. USER STATES—"*Oilgear was selected because of its simplicity, and the trouble-free, long-life performance record of other Oilgear-equipped machines in our plants.*"

With Oilgear Heavy-Duty System Components designed for thousands of hours of continuous service at full rated load, savings are compounded with every hour of uninterrupted performance. That's why machinery and equipment manufacturers and *their* customers say . . .

"for the lowest cost per year . . . it's Oilgear!"

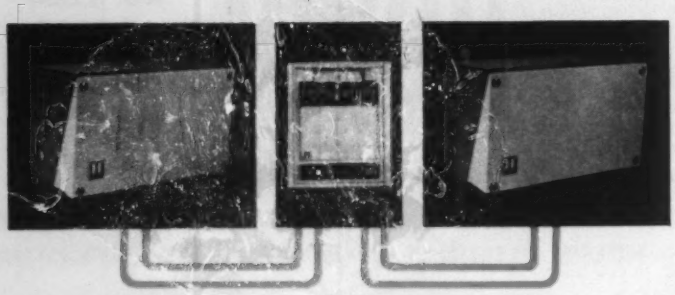
For solutions to YOUR linear or rotary Controlled Motion problems, call the factory-trained Oilgear Application-Engineer in your vicinity. Or write, stating your specific requirements directly to . . .

THE OILGEAR COMPANY

Application-Engineered Controlled Motion Systems

1572 WEST PIERCE STREET • MILWAUKEE 4, WISCONSIN

Phone: Mitchell 5-6715 . . . Direct Distance Dialing Code 414



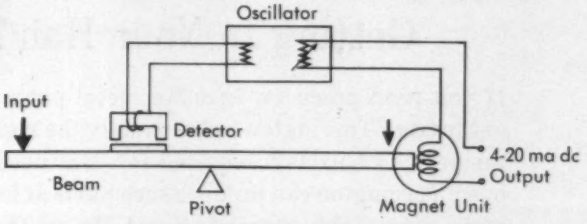
***ElectriK Tel-O-Set*—the true 2-wire system**

Care and feedback of delicate inputs

Delicate inputs thrive on the tender care of *ElectriK Tel-O-Set's force-balance feedback system*. This system, used as the basic circuit in *Tel-O-Set* transmitters, receivers, controllers, and other instruments, has proved itself in thousands of installations in the last five years. The force-balance feedback circuit increases the accuracy and dynamic response of the system by decreasing hysteresis effects and sensitivity to changes in ambient conditions.

Observe: (1) input force (from bellows, Bourdon tube, or displacement linkage) deflects pivoted beam; (2) air-gap in ferrite detector increases, (3) producing a change in inductance in oscillator circuit; (4) a portion of output current is fed back into magnet unit, producing a force on beam which is equal and opposite to input force; feedback balances beam. Full scale motion is only one-thousandth of an inch.

The advanced control engineering seen in force-balance feedback is carried through the entire *ElectriK Tel-O-Set* System. Specifically, there's no external power required at any field-mounted *Tel-O-Set* instrument. Line power connection is made only at the receiver. Two-wire d-c transmission eliminates shielding problems. The 4-20 milliamp signal range of the system gives a live zero and permits the use of the most reliable transistors available. The d-c signals



can be fed into data handling systems and millivolt-actuated instruments . . . can be easily transduced to a standard 3-15 psi pneumatic signal to operate existing pneumatic systems.

Take a new look at your control applications with the *ElectriK Tel-O-Set* System in mind! Get complete technical data from your local Honeywell field engineer. Call him today . . . he's as near as your phone. MINNEAPOLIS-HONEYWELL, 21 Penn Street, Fall River, Massachusetts.

Honeywell

First in Control

SINCE 1885

75th YEAR

PIONEERING THE FUTURE

Are Small Precision Metal Parts Getting In Your Hair?

If you need precision in small metal parts you can get it from Torrington—plus exactly the right finish, temper and hardness required for your needs. Moreover, Torrington can produce such parts at high speed and a remarkably economical cost. We are the leading specialist in this field—with the specialized skills, engineering experience and facilities to save you money. If you have small parts to be manufactured in large quantities why not let Torrington solve your entire problem. Let us hear from you and your request will receive prompt action.

progress through precision **SPECIAL METAL PARTS**

THE TORRINGTON COMPANY Torrington, Conn.

CALENDAR
OF MEETINGS

Sept. 6-16, National Machine Tool Builders' Association: The Machine Tool Exposition—1960, International Amphitheatre, Chicago. Information: Clapp & Poliak Inc., 341 Madison Ave., New York 17, N. Y.

Sept. 6-16, Production Engineering Show: Navy Pier, Chicago. Information: Clapp & Poliak Inc., 341 Madison Ave., New York 17, N. Y.

Sept. 7-9, American Society of Mechanical Engineers: Instruments and regulators conference, Massachusetts Institute of Technology, Cambridge, Mass. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

Sept. 7-15, Coliseum Machinery Show: Coliseum, Chicago. Information: A. Byron Perkins & Associates, 2807 Sunset Blvd., Los Angeles 26, Calif.

Sept. 12-13, Industrial Truck Association: Fall meeting, Cavalier Club, Virginia Beach, Va. Information: Hanson & Shea Inc., 1 Gateway Center, Pittsburgh 22, Pa.

Sept. 12-15, Society of Automotive Engineers Inc.: National farm, construction, and industrial machinery meeting; production forum; and engineering display, Milwaukee Auditorium, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Sept. 13-15, American Chemical Society: Fall meeting and exhibit, Statler-Hilton Hotel, New York. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

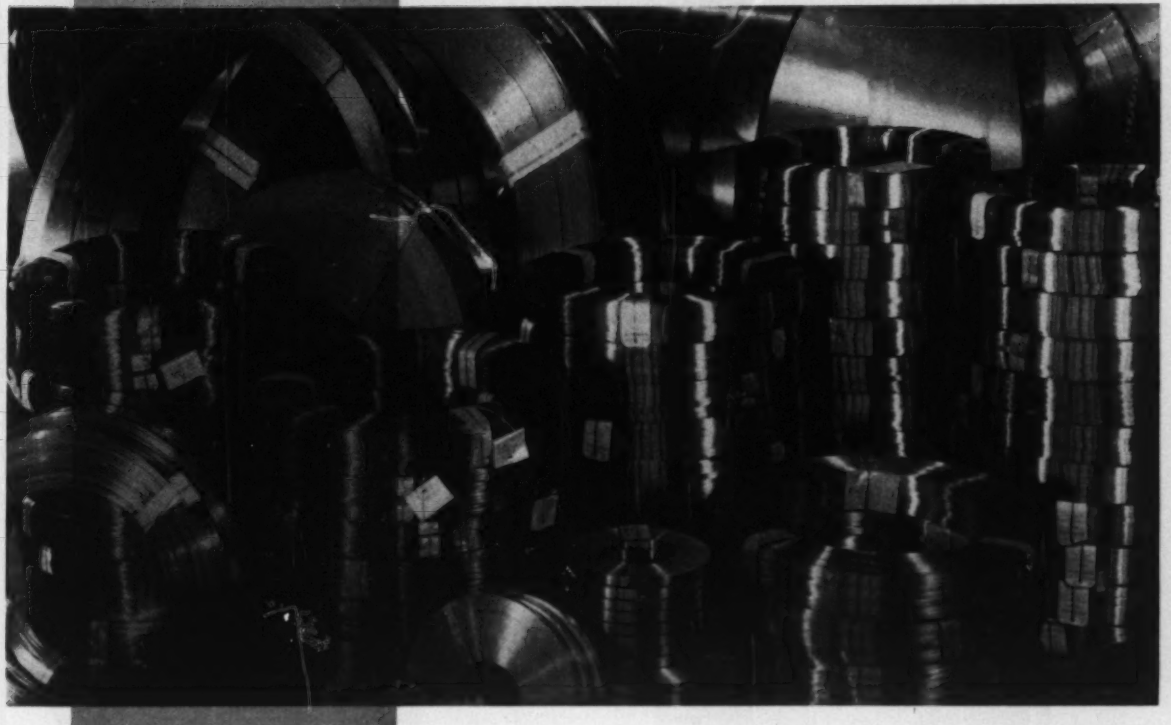
Sept. 13-16, Electronic Industries Association: Fall meeting, French Lick-Sheraton Hotel, French Lick, Ind. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

Sept. 14-15, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

Sept. 14-16, National Industrial Conference Board Inc.: General session for all associates on marketing, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

Sept. 15-16, American Society of Mechanical Engineers: Engineering management conference, Morrison Hotel, Chicago. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

15 Proofs of SANDVIK SPRING STEEL QUALITY

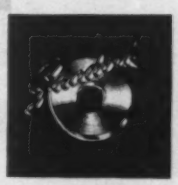


For up to 40 years Sandvik Specialty Steels have been used successfully for —

1. Compressor Valves
2. Band Saws
3. Piston Ring Springs
4. Conveyor Belts
5. Doctor Blades
6. Feeler Gauges
7. Clock & Watch Springs
8. Vibrator Reeds
9. Shock Absorbers
10. Razor Blades
11. Surgical and Special Knives
12. A wide variety of Springs
13. Textile Machinery Sinkers, Needles, etc.
14. Camera Shutters
15. Masons Trowels

This list of exacting applications is the strongest proof of Sandvik steel's consistent quality. Over the years, these users have found that when product performance depends on *specific physical properties, high fatigue life, accurate and uniform flatness, straightness, gauge, width and finish,* Sandvik quality is well worth its price.

Ask your nearest Sandvik office for further information or technical assistance.



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88-220

Family living today is richer, easier because of a bright array of appliances, housewares, and hardware that employ one of the breathtaking Nickeloid Metals. Scores of manufacturers already know the extra beauty, the practical utility, and the production economy made possible by these metals with gleaming finishes of chromium, brass, copper, or nickel. Product designers have combined the functional and the decorative to build faster, more profitable sales. Possibilities are endless. Nickeloid Metals, being completely pre-finished, simplify the entire manufacturing process, with greater profit. Let us set up a workshop session with your executives in design, sales, purchasing, and production. We have sales engineers at nearby sales offices qualified to unfold this fascinating picture. Or write us for descriptive catalog.

Nickeloid helps make a family's world

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SINCE 1898
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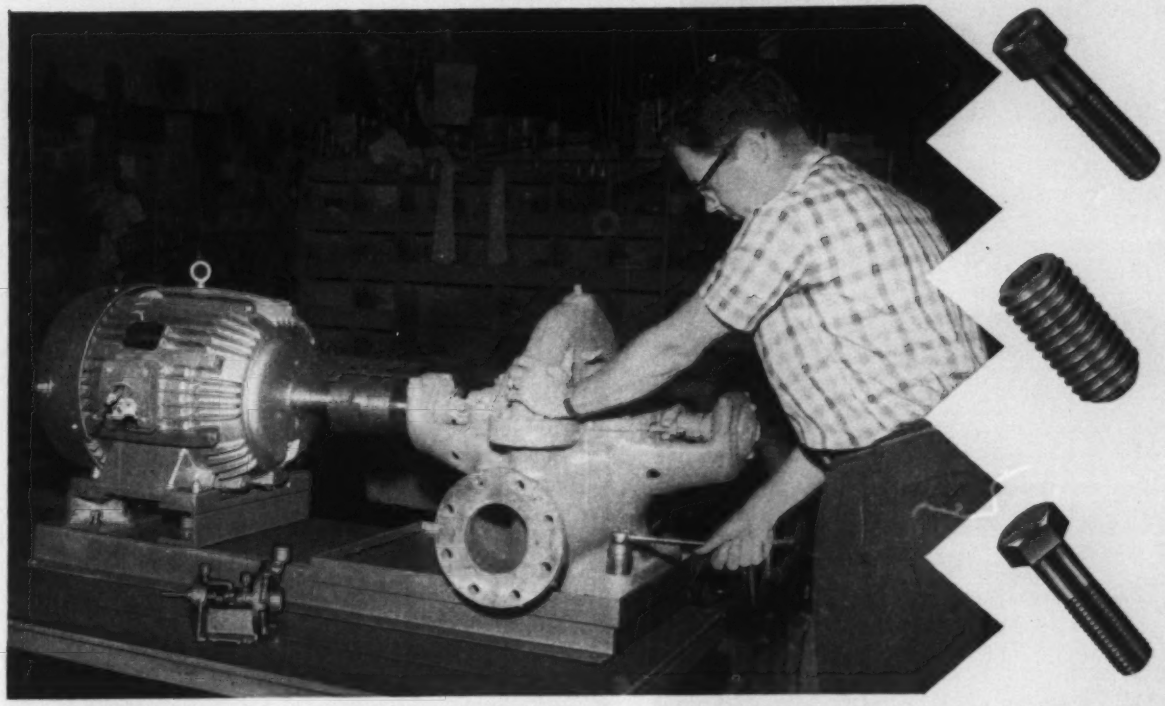
AMERICAN NICKELOID COMPANY, PERU, ILLINOIS · Plants: Peru, Ill., and Walnutport, Pa.

IT PAYS TO STANDARDIZE ON **STANSCREW**



Stanscrew service, complete selection save trouble, money for Deming Pumps

The Deming Company of Salem, Ohio has stringent requirements for fasteners. They must be of the highest quality to maintain Deming's outstanding reputation for dependability and low maintenance. And, since Deming produces the world's broadest selection of pumps for home, farm, municipalities and industry, they need a fastener supplier with a complete selection to meet a wide range of applications.

Using Stanscrew products and services, Deming fills these demanding requirements and receives many bonus benefits. For example, the Stanscrew fastener specialist and their Stanscrew distributor have provided technical assistance and stocking suggestions which have allowed Deming to reduce inventory in several instances, for significant savings.

Industrial leaders in every phase of industry are learning the wisdom of specifying Stanscrew for fasteners. A complete selection of over 5500 different types and sizes provides dependable, economical answers to the overwhelming majority of industrial requirements. Stanscrew's complete stocks at three convenient plants provide insurance against delivery interruptions. And, a really fast delivery policy avoids costly production interruptions in emergencies.

Call your local Stanscrew distributor today. He will be happy to arrange a prompt visit from the Stanscrew fastener specialist. Often his suggestions on assembly procedures, inventory adjustments or fastening techniques can cut your costs.

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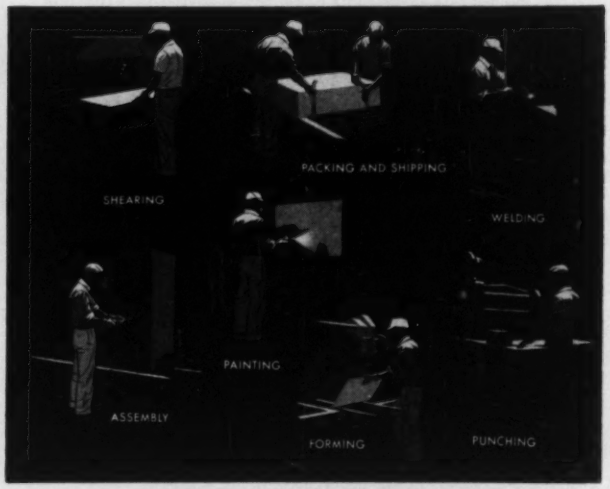
STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois

Whirlpool CORPORATION...

The Republic Roll-Over boxes have channel shaped legs which enable narrow forks to enter the legs, lift the unit, roll it over to hopperize the load, and then return the unit to a normal upright position. The boxes also have 8-way fork entry which facilitates narrow aisle handling.

The unique design of these special Republic Roll-Over Boxes permits nesting four high in trailers for inter-plant shipment. Special stacking brackets hold each Unit in place, eliminate sliding from side-to-side, or front-to-back, for greater safety in shipping and storing, and permit stacking eight high safely in storage areas. The results are savings in storage space, production time, and handling costs.

REPUBLIC STEEL LOCKERS give change, wash, and dress centers a new look, protect employee valuables and tools. Available with popular locking devices. Handles attached with tamper-free Gulmite screws and lockwashers. Bonderizing protects against rust and corsion, reduces maintenance costs. Republic will help you with locker planning, and assume full responsibility for installation. Write today.



REPUBLIC CAN DO IT FOR YOU—complete facilities for fabricating steel sheets, stainless steel sheets, vinyl coated steel sheets. Republic engineers work with you in developing your product, in solving manufacturing, assembly, and delivery problems. Well rounded stock of tools, dies, and a complete machine shop. Modern production line for shearing, punching, forming, painting, assembly. Call your Republic representative or write.

leading appliance manufacturer moves materials faster, easier, safer...with

REPUBLIC ROLL-OVER BOXES

Republic Roll-Over Boxes are used in moving materials to assembly lines in keeping production humming at Whirlpool Corporation, St. Joseph, Michigan.

These Units were designed and engineered by Andy Thomas of the Whirlpool Corporation, in conjunction with Republic material handling specialists, and Carl Thorkelson of Thornel Associates, containerization specialists representing Republic with offices at Chicago, Illinois.

This is a typical example of how Republic material handling specialists and representatives work with industries, big and small, in recommending proper Republic Units to save production time and costs.

Call your Republic representative or write direct for this expert service. Use the convenient coupon below.

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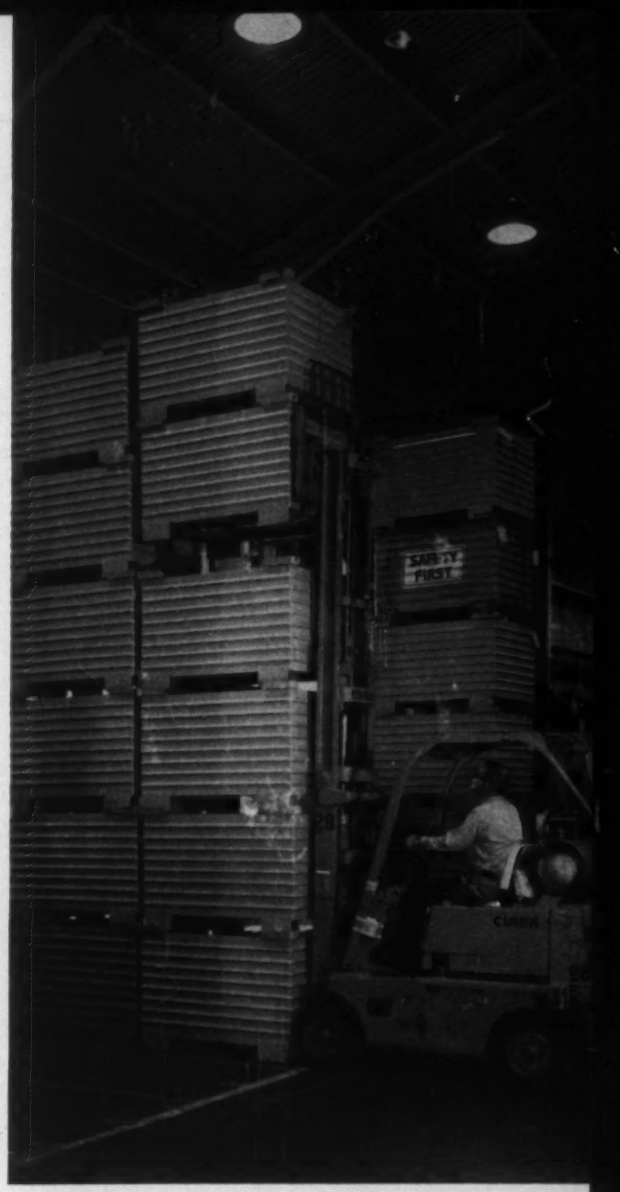
World's Widest Range of Standard Steels and Steel Products

REPUBLIC METAL LUMBER is a versatile building product of 1000 and 1 uses. Faster, safer, stronger framing in any application where common building products are now used. Simply measure, cut, assemble. Engineered slotted angle pattern speeds erection, reduces time and material costs. Solves hard to stock storage problems. Bonderized. Available in two gages, two widths, in standard bundles of 10- or 12-foot lengths. Send for attractive brochure.



The Whirlpool Corporation, a leading manufacturer of appliances for the home, has ordered 3000 of these special Republic Roll-Over Boxes. Republic material handling specialists will work with you in recommending standard units or in designing special units to move materials faster, easier, safer. Call your Republic representative, or write direct.

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PHILADELPHIA
OCT. 17-21

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- ☐ Roll-Over Boxes
- ☐ Republic Steel Lockers
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Today, Jessop's still at it—continuing research, improving techniques, piling up experience in making sophisticated steels to harness the atom. And Jessop is out front in other steelmaking fields too.

Whether you use heat- or corrosion-resistant stainless steels; abrasion- or shock-resistant steels; nonmagnetic or precision ground steels; high speed, cast-to-shape, clad or alloy steels, you can be sure of the quality—and *service*—you'll get when you do business with Jessop.

In quality steelmaking experience counts, and Jessop has it. Call a Jessop sales office in any of 23 major cities of North America and discuss *your* needs for specialty and alloy steels.

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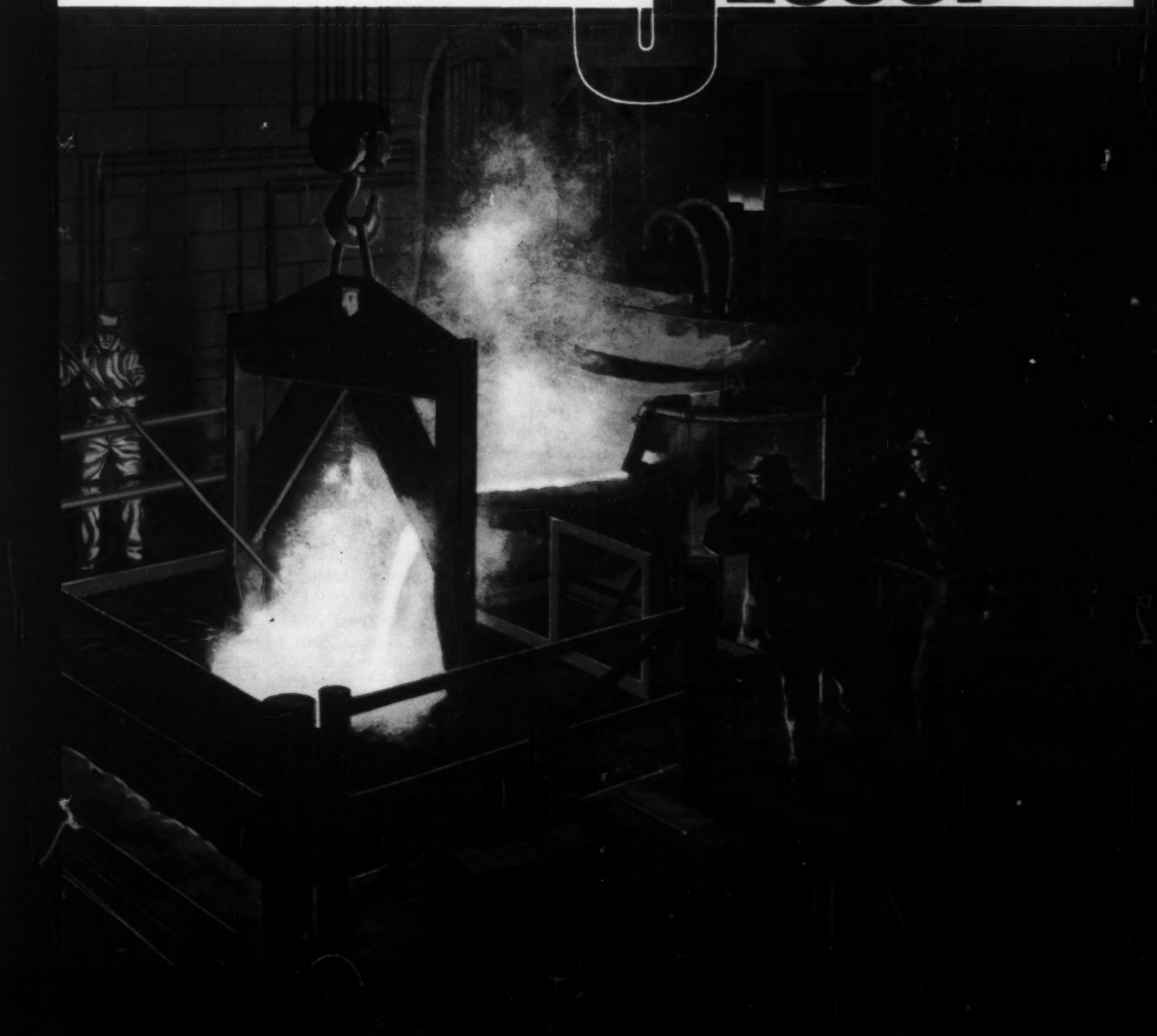

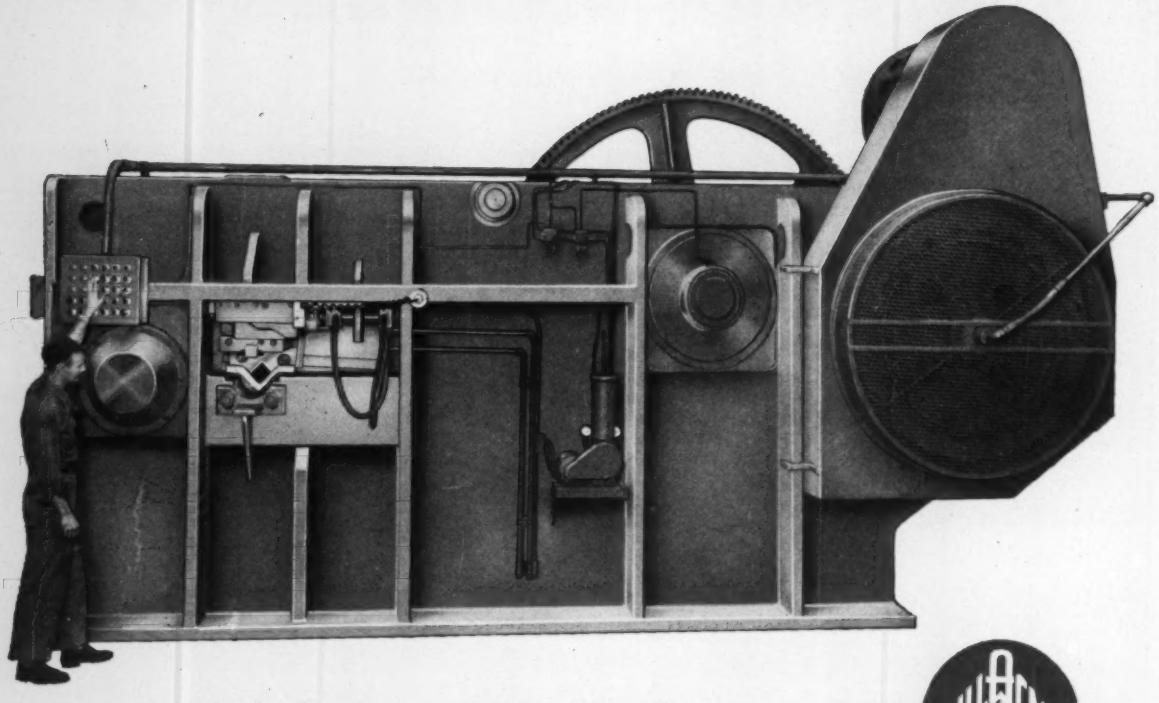

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HEAVY DUTY BAR-BILLET SHEAR
for production cutting of heavy billets

SIMPLE DESIGN The No. 1200 HILL ACME BAR-BILLET shear cuts large diameter squares of various tensiles. The basic principle of the lever and fulcrum is employed to insure maximum efficiency with low power input.

HIGH PRODUCTION With a free running speed of 26 cuts per minute the production of square, accurate lengths will appreciably reduce cutting costs.

VERSATILE Knives will accommodate many sizes of rounds, flats, squares or special shapes without the necessity of knife change.

LOW COST Initial machine cost is attractive and maintenance cost comparisons are impressive.

PROVEN EFFICIENCY Now proven through four years of successful operation in nationally known plants. Available with fully automatic, semi-automatic or hand feed.

SIZE RANGE HILL ACME BAR-BILLET shears are made in a range of sizes to efficiently accommodate every commercial requirement. Available in either right or left hand models.

Bulletin BB-59 gives complete details.

MMT-PE

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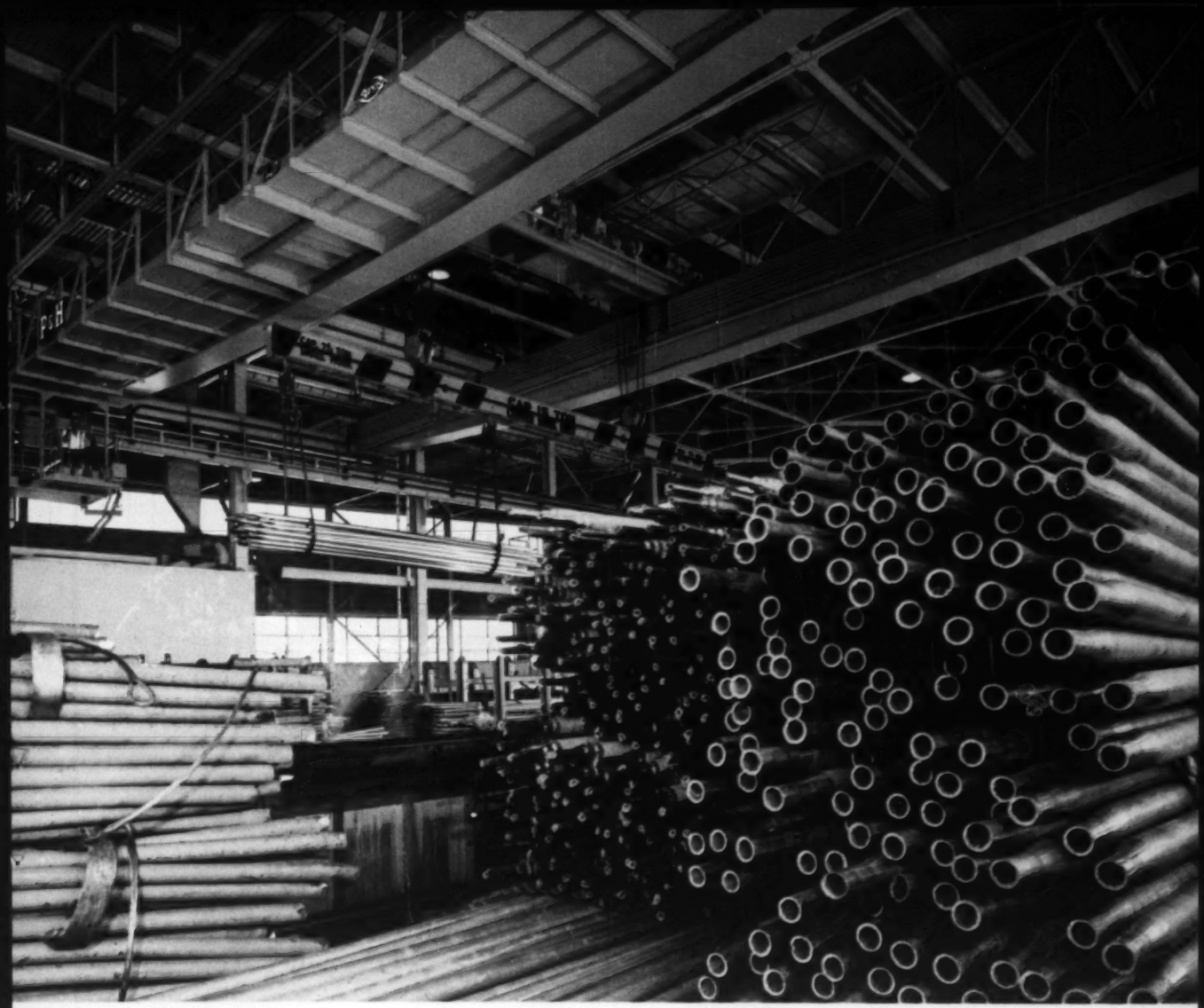
1201 West 65th St., Cleveland 2, Ohio

We now manufacture, distribute and sell the entire line of KLING Metal Working Tools.



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FOR EVERY APPLICATION, THERE'S ONE CRANE OUTSTANDING...

IN PIPE AND TUBE MILLS . . . Equipped with a double-hook-and-beam lifting arrangement, this P&H overhead crane is one of a number in this plant handling loads of pipe, tubing, and other equipment and material with complete safety. The operator stacks and positions such loads quickly and accurately with no dangerous swaying or twisting.

The installation is typical of the way Harnischfeger job-engineers each crane for a particular application. All factors affecting performance are carefully evaluated and integrated into the overall design. As a result, P&H cranes have established unequalled performance records in every major industry. This is the kind of proven quality that keeps operating costs to a minimum — year after year, decade after decade.

Find out how a P&H job-engineered crane can fit into your materials handling operations. Write today for crane bulletin C-42, Department 125, Harnischfeger Corporation, Milwaukee 46, Wisconsin.

P&H deep carburized gearing as well as bridge and trolley wheels are available as an option where service is particularly severe with frequent impact or shock loads. These two cross-sectional views clearly show how P&H's special heat treatment produces exceptionally hard wearing surfaces combined with a tough ductile core.

Sectional views of deep carburized wheel and gear

P&H
OVERHEAD CRANES

HARNISCHFEGER
Milwaukee 46, Wisconsin

P&H HEVI-LIFTS IGNORE HEAT AND STEAM

Clouds of steam and heat billow up around this P&H Hevi-Lift® hoist every time the paper digester is cleaned of residual material. This paper mill has found that a P&H Balanced Design Hevi-Lift hoist is engineered to take such punishment in stride, without any special care or coddling. Totally enclosed motor and controls simply ignore the "torture-test" atmosphere.

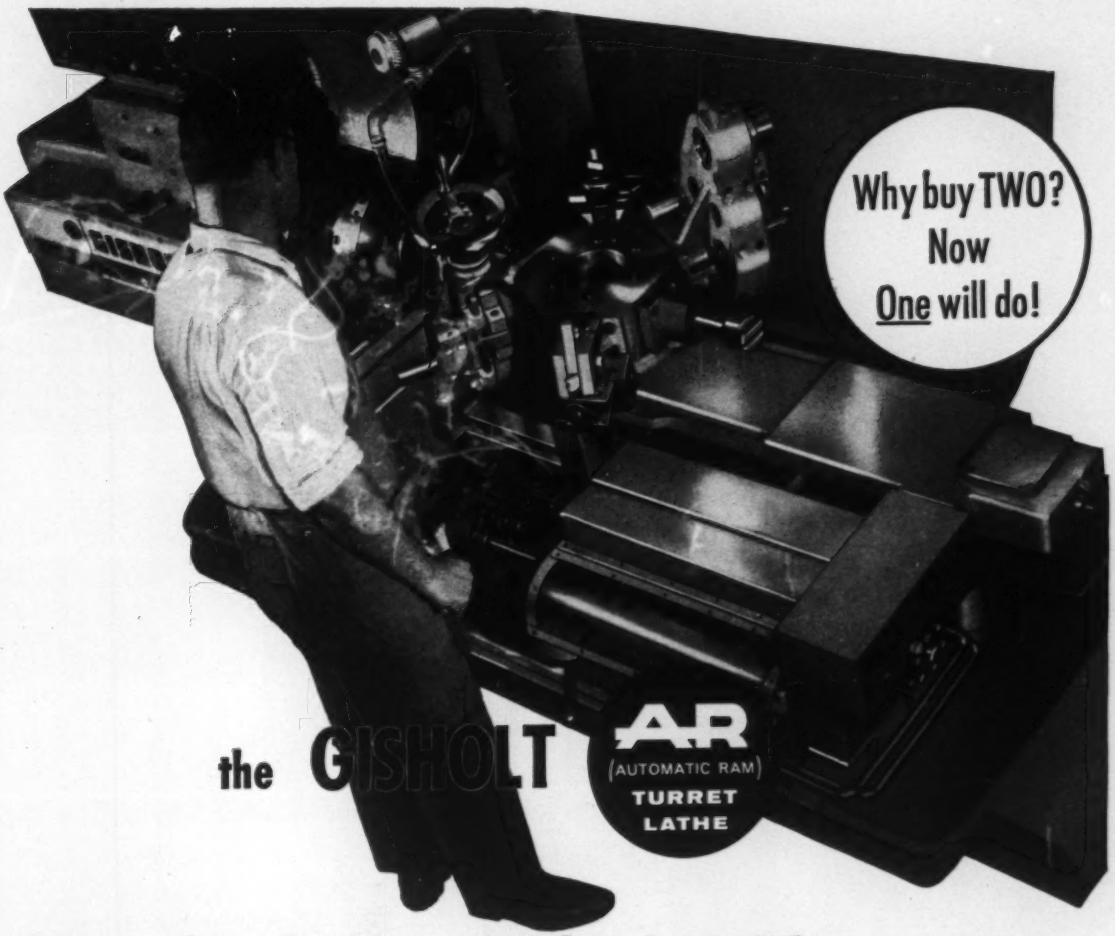
Balanced Design of this Hevi-Lift means that every part has been balanced or matched with every other part for maximum strength, temperature, and performance characteristics. Result? This Balanced Design hoist will stand up longer in heavy duty cycles (and under conditions like this) — with far less maintenance — than any other hoist made today.

For more information, write for bulletin H-55. Department 227, Harnischfeger Corporation, Milwaukee 46, Wisconsin.

P&H
HEVI-LIFT HOISTS

HARNISCHFEGER
Milwaukee 46, Wisconsin

Photo courtesy Cornell Paperboard Products Co. Milwaukee, Wisconsin



does both bar and chucking work

Why settle for less? The NEW Gisholt AR (Automatic Ram) brings automatic cycle efficiency to both bar and chucking work—gives you low-cost automatic production at fixed rates on both small lots and long runs.

Here are some of the advantages this new AR gives you:

1. Converts in 1 hour from chucking to bar work
2. Sets up as fast as any ram-type turret lathe—much faster than any other automatic
3. Saves time with infinite feeds, 16 speeds, plus a 25 h.p. motor to take full advantage of carbides
4. Machines more surfaces per chucking with: a hexagon turret and two cross-slide stations—up to a 15″ chuck—a 14″ turret stroke and 10″ cross-slide travel

With this new automatic, even a new man can get consistent quality at fixed production rates. He simply chucks, starts the cycle and removes the finished part. On bar work he does even less.

Ask your Gisholt Representative for your personal, desk-side demonstration showing how easy it is to set up and operate the AR. Ask him to explain the cost-cutting features that add up to increased profits on your work.

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Turret Lathes • Automatic Lathes • Balancers •
Superfinishers • Threading Lathes •
Factory-Rebuilt Machines with New-Machine Guarantee

Investigate Gisholt's Extended Payment and Leasing Plans

CARS

STEEL is an automobile, modern sculpture in motion. About 3600 pounds of sturdy steel make today's American car the safest, most useful family vehicle in the world. And the most beautiful. For stylish steel is the designers' metal. It can be drawn, formed, finely shaped—and it gains in strength as you work it. Youngstown makes quality carbon, alloy and Yoloy, (and soon to be announced) galvanized steel sheet and strip to exacting standards that have made Youngstown a growing force in steel.

CANS

STEEL is a container, thinly coated with tin—the practical tin can. No other container guards a product so well, and delivers throw-away convenience at such low cost. Youngstown is a leading supplier of quality tin plate. The addition of the world's only six-stand tandem cold reducing mill to Youngstown's Indiana Harbor No. 2 Tin Mill will yield thinner, more accurate gauges to serve you even better. For your growing tin plate needs, you can depend on Youngstown, a growing force in steel.

Youngstown –

THE YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO.

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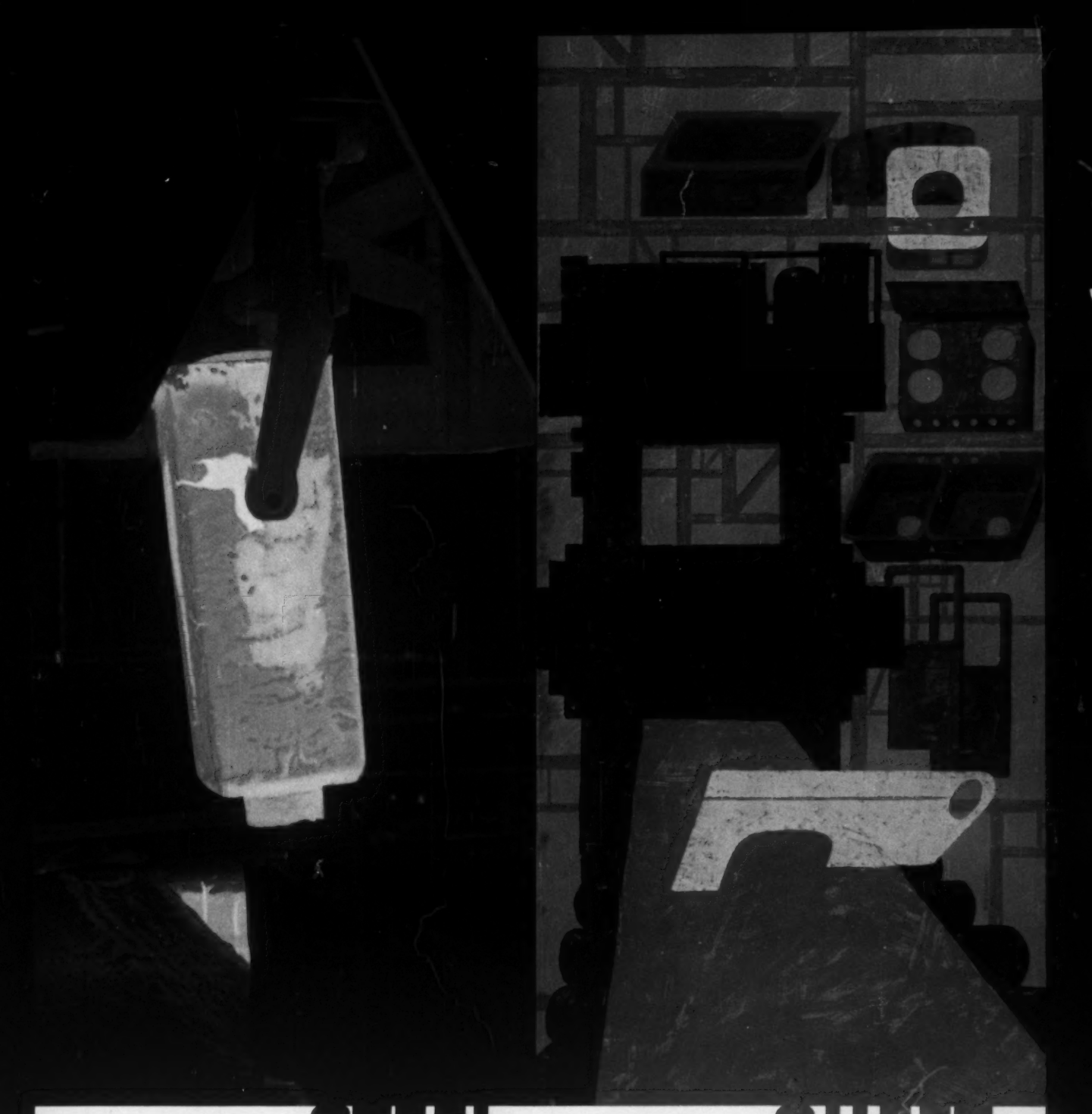

STEEL SHEET

STEEL sheet is a way to make things. Toys, locomotives, cars and cans. Dishwashers and curtain-wall buildings. In Youngstown, modernization and expansion on the 79-inch hot rolling mill will mean you can get coils up to 50,000 pounds for faster, more efficient handling. Coils with fewer welds to help you turn out better products at lower cost to successfully meet competition at home and abroad. Modernization and expansion to serve you better will keep dynamic Youngstown a growing force in steel.

YOUNGSTOWN STEEL sheet is tested and retested for quality. It is decoiled, inspected, oiled and coiled again in extra steps after tempering, to deliver smoother, finer sheet. Get it hot rolled or cold reduced, in the temper and gauge you want. In precision cut lengths as well as coils. And in the finish you want. You can get it through 28 Youngstown Offices or from your steel service center. When you want quality product and dependable service, call on modern Youngstown, a growing force in steel.

growing force in steel

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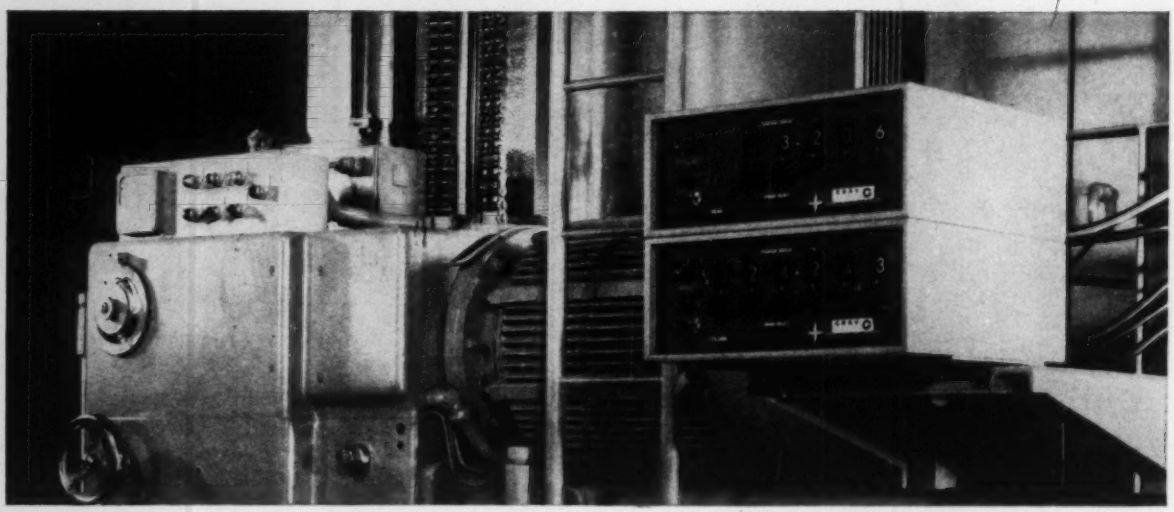
NORDEN Modumatic Control for New and Existing Machines

Series 100 features

- ★ Actual Position Readout
- ★ Decimal Display
- ★ Full Range Origin Select



IF you have the time-consuming problem of rotary or linear positioning, then you are aware of the importance of knowing the exact location of the tool or the work piece. Up until now this was a tedious, time-consuming process requiring calculation and dial reading, both subject to human error. Norden's Series 100 display system eliminates all this and performs the calculations automatically. What's more, it can be installed on **new** and **existing** machines.

The Series 100 numerical control system utilizes a unique position feedback transducer, electronic circuitry and a visual display to indicate the **actual** position of the tool or work piece.

The **actual** position is displayed in straight decimal form by illuminated numbers that are readable from twenty feet. The display unit may be located on the machine or remote.

This Norden Modumatic system also offers a full range electronic origin select so that any desired offset can be quickly and easily dialed in by the operator on manual selector switches.

For more information about this position display system or other Modumatic control systems contact your nearest Norden Representative—400 Main Street, East Hartford, Connecticut, JAckson 8-4811, 11 West Monument Ave., Dayton 2, Ohio, BAldwin 8-4481, or write to us at the address below.

A new concept in Numerical Control from **NORDEN** ★ DIVISION OF UNITED AIRCRAFT CORPORATION
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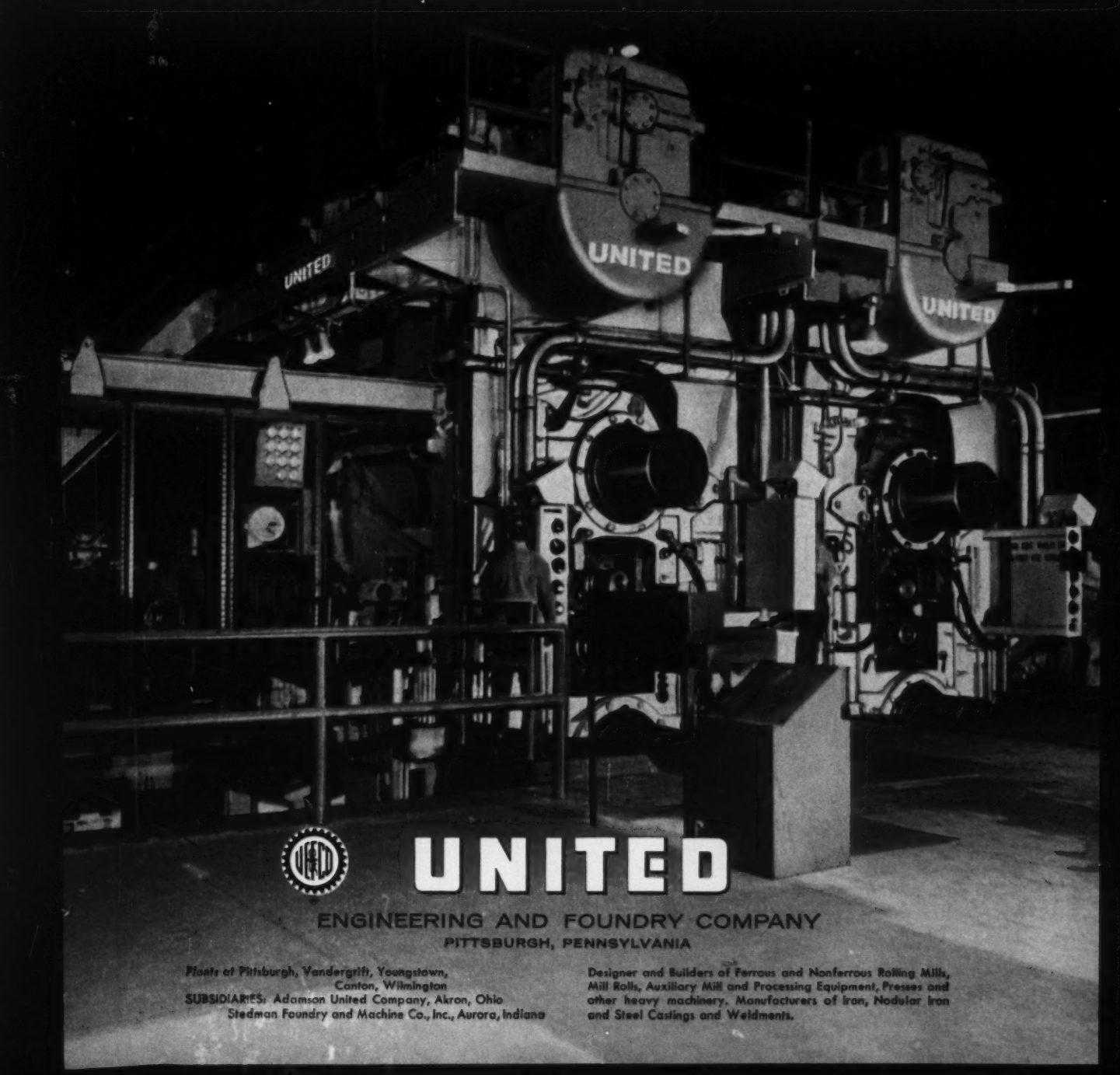

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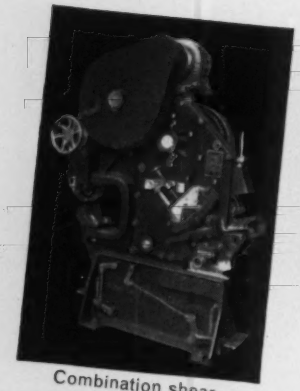
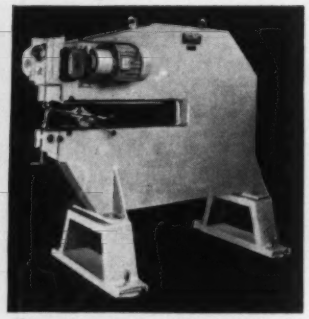
Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designer and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

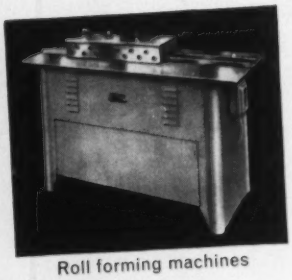


Combination shear, punch and coper

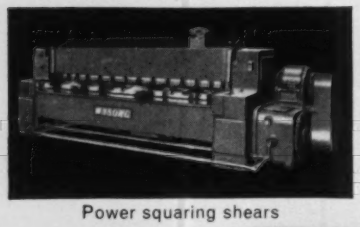


Shearing and forming machines

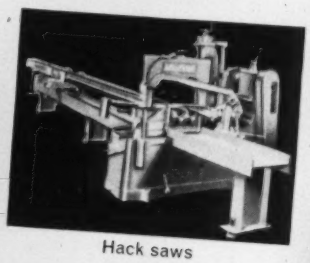
Arc welders



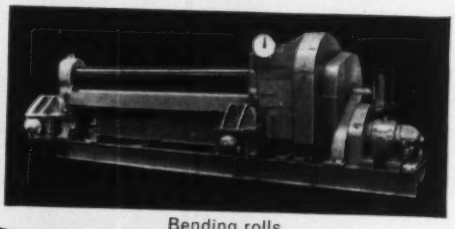
Roll forming machines



Power squaring shears

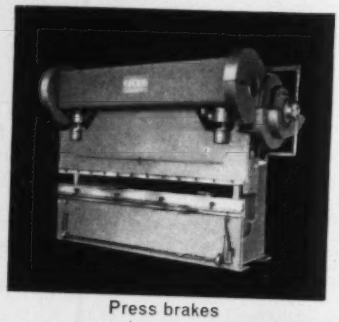


Hack saws

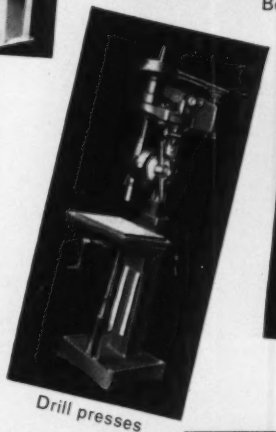


Bending rolls

Hoists

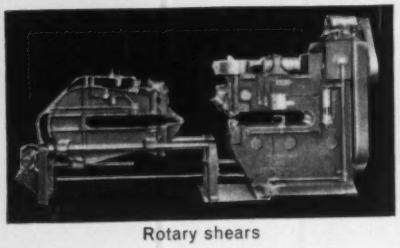


Press brakes

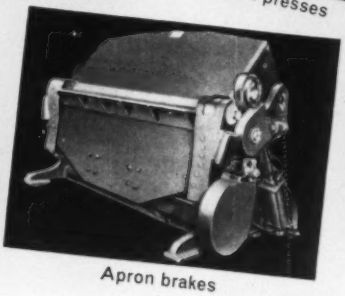


Drill presses

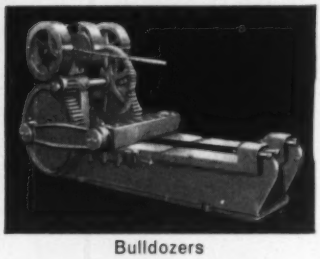
Straight side presses



Rotary shears



Apron brakes



Bulldozers

THE METALOGICS OF METALWORKING MACHINERY

375-ton rolls . . . 7½-lb. punches . . . everything in-between. Whatever you need in metalworking machinery, look to Ryerson. More than 3800 types and models are available—produced by almost 100 of the nation's top manufacturers.

And Ryerson offers unbiased recommendations based on the experience of 117 years' service to metal fabricators. You also get a double guarantee of satisfaction—ours and the manufacturers'. Consult your Ryerson machinery specialist, today.

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RYERSON STEEL

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STEEL
The Metalworking Weekly

Metalworking Week®

September 5, 1960

Our Fight for Survival In New World Market

TWO MILLION Americans have lost their livelihood since 1956 because of foreign trade changes.

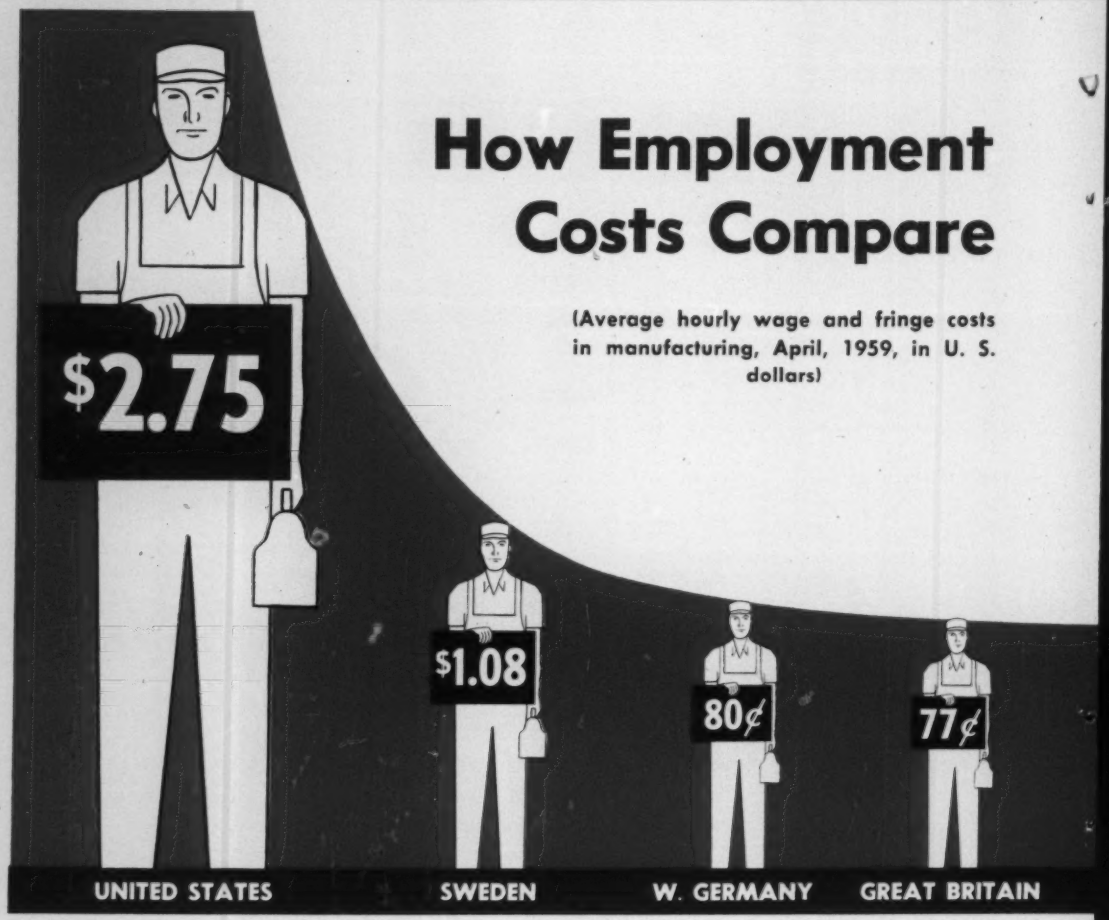
We're losing the fight for survival in the new world market.

Pierre Hans Ubishi is after the excellent job you've held for years. He's smart, ambitious, and gaining momentum.

Volkswagens on the streets and Japanese radios in homes are ample proof the foreign invasion is here. Not so self-evident is the decline in our industrial exports. But it's clear to Americans who have lost their jobs since 1956 directly as a result of drooping shipments abroad. Statistically, here's what the import-export shift is doing to U. S. industry:

1956 imports	$12.6 billion
1959 imports	$15.2 billion
Import rise	$ 2.6 billion
1956 exports	$17.3 billion
1959 exports	$16.3 billion
Export decline	$ 1.0 billion
Total loss to U. S.	$ 3.6 billion

You get the full impact of the $2.6 billion rise in imports by computing what that amount of business would mean to U. S. firms: It would generate sales of more than $3 billion because our prices average 20 per cent higher than those of our foreign competitors. That $3 billion, plus the $1 billion loss in exports, adds up to a $4 billion loss in sales to U. S. industry since 1956. The 2 million Americans whose livelihoods have been dislocated include 700,000 who



have lost their jobs, plus 1.3 million of their dependents. (For details of the impact on jobs and markets, see Page 37.)

The New World Market

What has caused the profound change in our trade status?

Higher wage and fringe payments to U. S. workers are important reasons (above). We pay up to five times more per hour for our labor than our foreign competitors do. Our productivity is rarely five times better. Sometimes it's lower.

Another cause is the industrial expansion in Europe and Japan (Page 47). The countries of the European Coal & Steel Community had a steel ingot capacity of 38.8 million net tons in 1938. It's 69.5 million tons now. It will be 97.7 million tons by 1965. They have goods to sell and must export to survive.

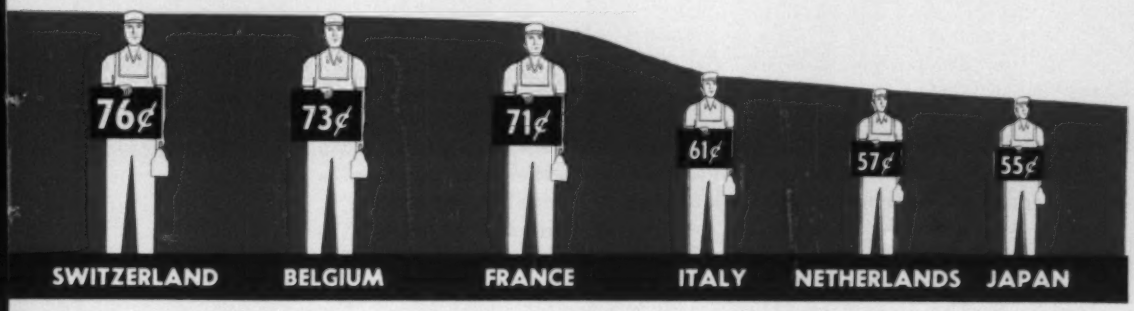
Dozens of other factors contribute to the trade revolution—our own inertia or indifference, inadequate help from our own government in depreciation reform and other areas, insufficient gains in production efficiency, inability to adapt our mass production and distribution structures to the smaller or special markets abroad, weak credit terms, poor market research, faulty design, sloppy service. The Europeans and Japanese have contributed to it too, with trade barriers or currency restrictions that discriminate against our goods, with lower prices.

It all adds up to a new world market, to which metalworking firms abroad have been better in tune than we. Example: In 1946, all the 13,000 refrigerators

EMPLOYMENT COSTS BREAK DOWN LIKE THIS

- **U. S.** — $2.75
  Average hourly wages were $2.23. Average fringe expenses reached 52 cents per hour, 19 per cent of total costs.
- **SWEDEN** — $1.08
  Fringe benefits amount to about 15 per cent of gross hourly employment expense, with some two-thirds of that resulting from the cost of paid vacations and holidays.
- **W. GERMANY** — $0.80
  Fringe costs amount to 34.3 per cent of gross hourly wage costs. Employers' social security payments are the largest element in fringes.
- **GREAT BRITAIN** — $0.77
  Fringe benefits in manufacturing average about 12 per cent of gross employment cost.
- **SWITZERLAND** — $0.76
  Employers pay about 25 to 30 per cent of gross hourly wage costs in fringes.
- **BELGIUM** — $0.73
  Fringes amount to 31 per cent, on the average, of gross hourly wage costs.
- **FRANCE** — $0.71
  Fringe charges, mostly for social security, amount to 50 per cent of gross hourly wage costs.
- **ITALY** — $0.61
  Fringes, among the highest in the world, amount to 74 per cent of gross hourly wage costs.
- **NETHERLANDS** — $0.57
  Employers pay 30 per cent of gross hourly wage costs in fringe benefits.
- **JAPAN** — $0.55
  Fringes are complex, including two bonuses a year, insurance, and payments in kind (such as company housing, free noon meals, medical care) amounting to 15 per cent of cash wages. Total fringes amount to about 55 per cent of gross wages.

Dollar figures based on bank exchange rates.
Sources: U. S.—Census Bureau; Europe—Institut National de la Statistique, Paris, and Royal Swedish Embassy; Japan—U. S. Department of Commerce; Embassy of Japan.



and 1000 washing machines sold in Brazil were imported from the U. S. By 1956, the Brazilian market had increased to 150,000 refrigerators and 40,000 washing machines. How did U. S. makers fare in the bigger potential? They didn't export a single refrigerator or washing machine to Brazil in 1956!

South America still absorbs about 25 per cent of our exports. But local manufacturers are making headway in consumer goods. West European and Japanese firms are taking over in capital equipment today. Maybe the Soviet bloc will be in command tomorrow.

Economic Isolationism?

Many U. S. manufacturers suffer from economic isolationism. The rationale: Forget those foreign markets and build tariffs to keep the foreigners out of our domestic preserves, the biggest, richest market in the world, with plenty for us.

The fallacy is that we already have a tremendous stake in world trade. Measured by any yardstick, the U. S. is the biggest international trader and investor of all times. Our share in world commerce is one-sixth of all international traffic.

Furthermore, we couldn't get along without imports—iron ore, bauxite, nickel, and many others. The telephone, for example, contains 48 imported materials.

We have only one way to maintain or expand our ability to import: Maintain or expand our ability to export.

The wage differential between foreign and U. S. workers won't disappear

for years to come, if ever. Our currently important industrial competitors will keep the pressure on us for decades. And new industrial rivals, the Communist nations, will make the fight even tougher.

On the import side, we can at least strive to contain the general level of incoming metalworking shipments, concentrating on reducing those that have been particularly troublesome—some steel products, fasteners, hand tools, electrical equipment, machine tools, automobiles, and other products.

We can make our greatest gains on the export side. "The foreign market is the crucial market for our economy," says Economist Peter F. Drucker. "Performance in it will determine our ability to prosper and grow."

What to Do?

How can we improve our performance overseas? Experts queried by STEEL suggest a 15 point program (see Page 69). Many of the suggestions will help in our competition against imports too, so they have double-edged value.

1. **Adopt a World Concept**—Look at the African market as you would the western U. S. market, for example.

2. **Gage Your Potential**—Foreigners aren't as statistically minded as Americans and often don't have good figures. But you can usually find out if there's gold in the hills by digging.

3. **Audit Your Resources**—Can your staff handle long distance business? What's the patent situation? Should the product be made here or abroad?

4. **Audit the Competition**—Know his strengths and weaknesses.

5. **Pick the Route**—Participation in world markets comes via one or a combination of these approaches: Investment in foreign facilities; exporting; licensing; or establishment of sales, engineering, or contracting branches.

6. **Know the Market**—This goes beyond statistics to the mores of the region. If you don't know them, you may become an "Ugly American."

7. **Sharpen Marketing**—Sell in Rome as the Romans sell, only a little better.

8. **Use Trade Fairs**—They're a more important market place in Europe than here. But too many U. S. companies ignore them.

9. **Fight the Credit War**—Price isn't as important in many cases as the down payment and monthly terms. Most foreign governments help their industry. But the U. S. does little.

10. **Beware of Graft**—Resist it, but don't be shocked when you run into it.

11. **Watch Tactics Change**—Overseas metalworking firms are beginning to push quality and service as much as price. That marks a shift in tactics, one of many alert moves you can expect from the competition.

12. **Improve Service**—It's probably the U. S. manufacturer's strongest asset—in domestic business. Why not in trade abroad too?

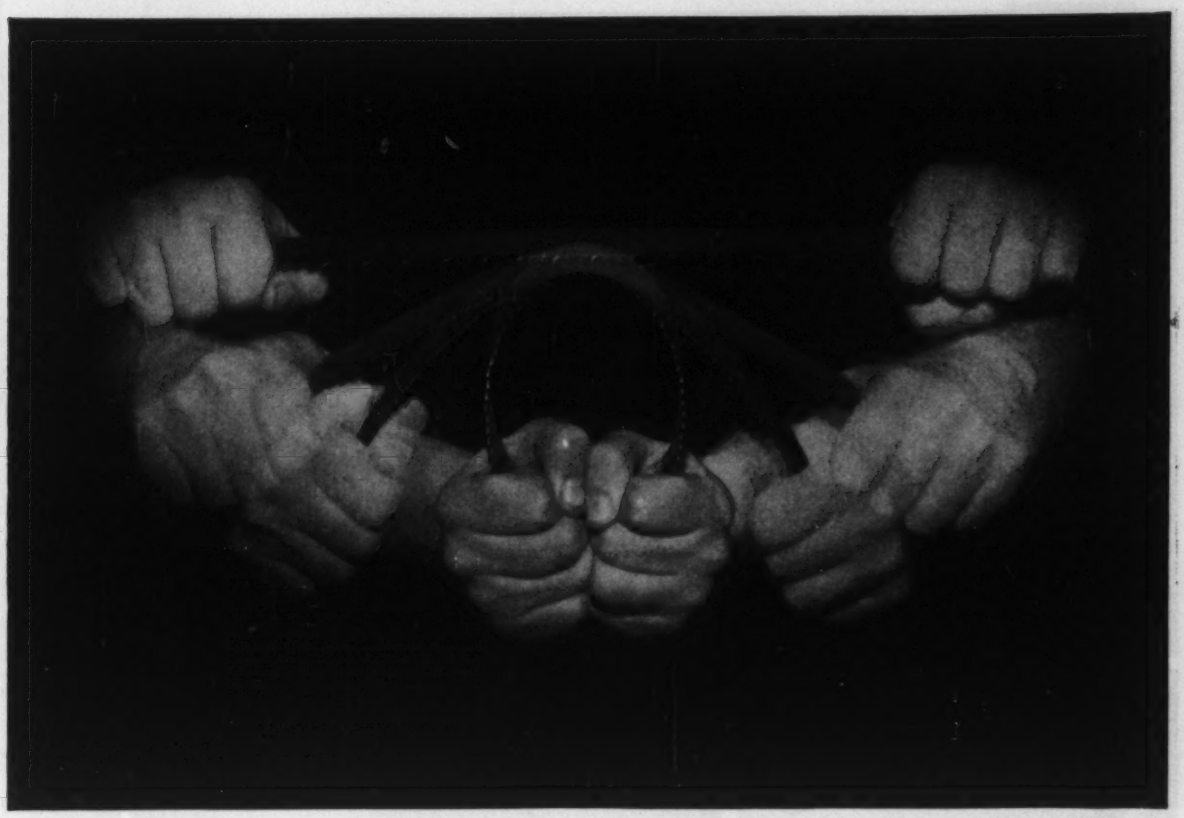
13. **Strengthen Technology**—Here's another U. S. asset not exploited sufficiently. We don't get as much for our research dollar as Europeans and Japanese do. And we aren't taking full advantage of new equipment possibilities.

14. **Sharpen Product Design**—Three things are needed overseas: Simplicity, ease of use and maintenance, and minimum cost.

15. **Sell Employees**—Kaiser Steel Corp. had to shut down its welded pipe plant for a while this summer because of foreign competition in the Los Angeles area. It told its employees the reason. Workers will help you cut costs if you sell them on the necessity.

Our export-import trade in metalworking products has an iceberglike quality. The peril may not be apparent even though many imports have soared while many exports have nose-dived. If the trends are unchecked, more U. S. industries will be casualties. More Americans will lose jobs. You could lose yours.

Copyright 1960 by STEEL, Penton Building, Cleveland 13, Ohio



So it doesn't break---*So what??*

So we can bend a MARVEL High-Speed-Edge Hack Saw Blade double, and it won't break. Does this prove anything?

Let's see if it does. When you buy a box of hack saw blades, you expect each blade to have a reasonable cutting life. For example, take an ordinary blade that costs $4.00, and you expect it to produce 2000 sq. inches of accurate cutting-off before it is discarded. Would you be willing to pay $8.00 for that same blade? *You will, if it breaks halfway through its expected life.*

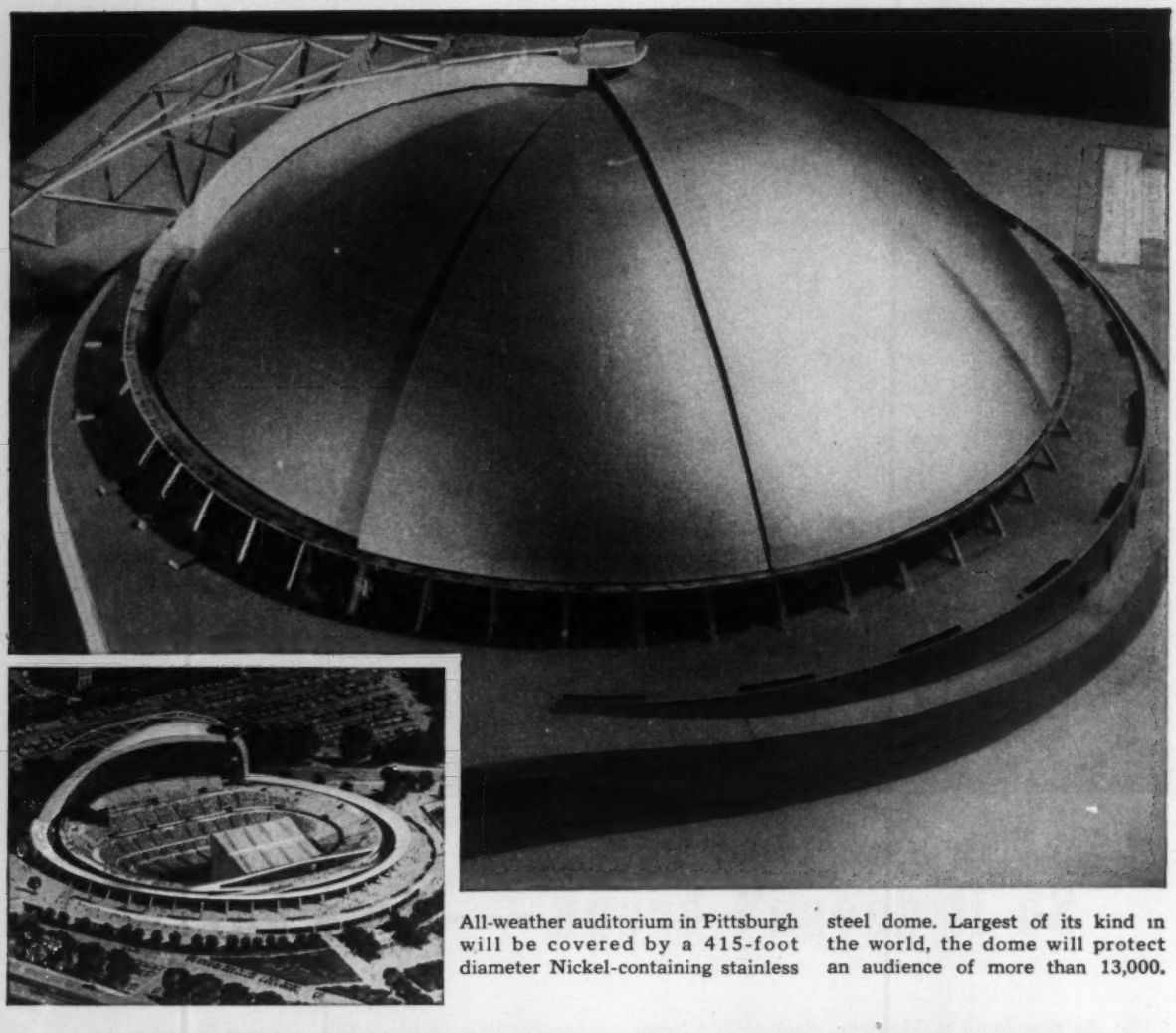
Bending a MARVEL High-Speed-Edge Hack Saw Blade to demonstrate that it is truly unbreakable proves the point that you get every square inch of blade life you pay for when you buy MARVEL Blades.

Safety to both operator and machine, plus maximum blade life, seem like value enough from this remarkable blade. However, these MARVEL Blades give you even more, for they will cut faster, with greater accuracy because they can be safely tensioned more taut in your machine than ordinary "breakable" blades and are therefore more rigid to resist deflection.

Cost? Unbreakable MARVEL High-Speed-Edge Hack Saw Blades are priced competitively. Use MARVEL Blades consistently with complete confidence because they have no equal for value. Leading Industrial Distributors stock and sell MARVEL. Ask yours today.

ARMSTRONG-BLUM MANUFACTURING CO.
5700 West Bloomingdale Avenue • Chicago 39, Illinois

MARVEL Metal Cutting SAWS
Better Machines-Better Blades



All-weather auditorium in Pittsburgh will be covered by a 415-foot diameter Nickel-containing stainless steel dome. Largest of its kind in the world, the dome will protect an audience of more than 13,000.

"Push-button umbrella roof" of stainless steel gives Pittsburgh a new all-weather auditorium

Watching a play or listening to music under the stars heightens the enjoyment. That is, until a passing shower comes along to wash out the fun. But now comes a new idea in auditoriums. In this one, an umbrella roof of Nickel-containing stainless steel will close at the first drops of rain—and on with the show.

It's a simple concept, but a daring one. Eight huge sections nest together when the dome is open. Push a button, and six of these sections glide quietly together around an outside track.

They looked into all sorts of sheathing materials in designing the dome before choosing stainless – a Nickel-containing stainless steel.

For stainless with Nickel in it is one of the most weatherproof metals there is. It is corrosion-resisting all the way through – in salt air as well as industrial atmospheres. What's more, it's virtually self-cleaning – rainfall alone keeps this metal clean.

No wonder you see Nickel-containing stainless wherever strength, long life and handsome appearance are called for! Not only in buildings – inside and out – but everywhere you look.

Suggest something to you? Can stainless help you solve a problem involving corrosion, stress, appearance, temperature extremes? The way to find out is to write us. We'll see if Nickel-containing stainless steel – or some other nickel alloy – may be just what you're looking for.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street INCO New York 5, N. Y.

INCO NICKEL

NICKEL MAKES ALLOYS PERFORM BETTER LONGER

Let's Meet the Challenge!

Metalworking managers are wondering where the boom promised for the 1960s has gone. Many suspect it has gone abroad.

While our business limps along at a disappointing pace, steel mills, auto plants, and other metalworking establishments of Western Europe and Japan are operating at near capacity.

They are supplying more goods to the new world market. We are supplying relatively less.

Our imports are rising. Our exports are lagging.

Our industry is losing business. Our workers are losing jobs. Our government is losing tax revenues.

Our foreign competitors have advantages. They pay much lower wages. They have a vastly expanded and modern metalworking capacity, often built with our financial and technological aid. They have a lean and hungry attitude. They are aggressive in producing for and selling in the world market, including the U. S.

The first reaction of some U. S. industrialists is to call for protection—tariffs, import quotas, buy American campaigns.

We doubt that such measures can provide a long term solution. We believe the time is past when we can build a fence around America and live in comfortable isolation. We must import. We must export. We must compete with many new venders for both old and new customers.

We don't pretend to have all the answers, but we hope that this special issue will lead to a better understanding of the full gravity of the problem and give direction to your thinking on what must be done by industry, labor, and government.

We believe foreign competition is one of the gravest problems the metalworking industry will face in the next generation.

Let's meet the challenge for survival in the new world market.

Walter J. Campbell

EDITOR

udylite

research 'punch' breaks through the semi-bright nickel plating barrier!

the udylite corporation

BRAND NEW PROCESS is easier to operate and control, provides better uniformity of color and greater production efficiency than ever before!

here's why:

NO HARMFUL BREAKDOWN PRODUCTS. There are no harmful materials formed from the N2E addition agents as a result of the plating process! Thus, batch treatment is necessary only when contaminants from other sources enter the bath and continuous carbon filtration will not remove them. The result is a substantial saving in solution, downtime, manhours and additional chemicals ordinarily required to treat and rebuild the plating bath.

CONSISTENT UNIFORMITY. N2E addition agents are noncritical in concentration. Reasonable variations from recommended concentrations will not seriously affect the characteristics of the deposit. Overall uniformity of color is maintained. Even in deep recesses on the backs of intricate die castings, amazingly clean deposits are obtained.

WIDE CURRENT DENSITY RANGE. N2E's average current density range is 30 to 60 amperes per square foot, with a considerably higher limiting current density. This wide range permits faster plating at a higher average current density without burning.

GREATER TOLERANCE TO METALLIC IMPURITIES. The absence of harmful breakdown products is of special importance in connection with metallic contaminants, since the undesirable effects of the two are cumulative. Another N2E 'plus' factor that helps maintain uniformity and quality.

ADHESION GREATLY IMPROVED. Production experience over a considerable period of time has conclusively demonstrated the excellent adhesion characteristics of Udylite N2E in combination with the Incomparable '66' Bright Nickel Process.

ECONOMICAL CONTINUOUS FILTRATION. One of the outstanding advantages of N2E is the fact that the bath can be continuously filtered through an activated carbon pack without appreciable loss of brighteners. The cleaning action of the continuous carbon filtration permits long periods of uniform, high quality production. The stability of N2E addition agents also permits economical bath purification by low current density electrolysis.

CAN BE ADDED DIRECTLY TO BATH. N2E addition agents are liquid and can be added directly to the bath without the use of filters. For high-speed operation, air agitation of the bath is recommended, although N2E performs well with mechanical agitation and can even be used without agitation.

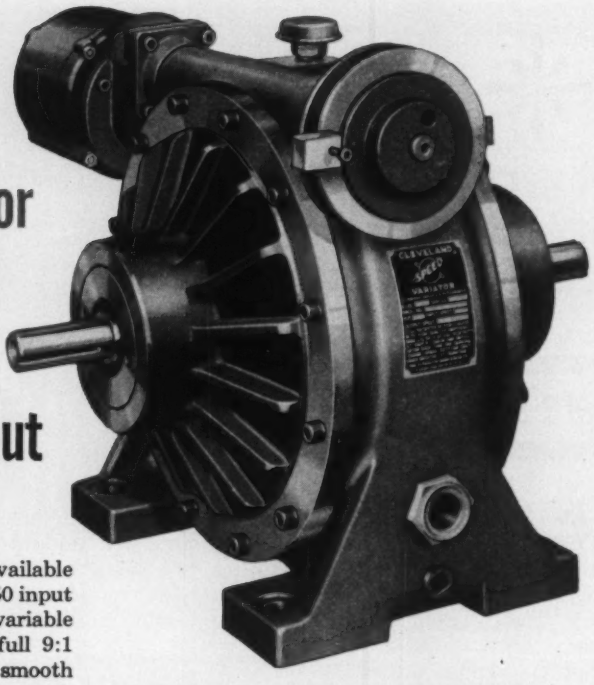
See for yourself what N2E can do to improve your plating operation. Submit one of your problem parts for test plating now. See your Udylite representative. Or, write or phone:

detroit 11, michigan • on the west coast: L. H. Butcher Co.

world's largest plating supplier

udylite

Cleveland Speed Variator is the Best Answer to *Precision Control* of Variable Speed Output



Advanced-designed Cleveland Speed Variators—available in 18 models ranging from fractional to 16 hp at 1750 input RPM—accurately provides dependable, infinitely variable speed control. They give stepless speed over a full 9:1 range—from ⅓ to 3 times input speed. Instant smooth change of output speed can be adjusted by either manual, automatic or remote control. Precise adjustments are always made with accurate adherence to settings.

Thousands of Variators are in daily use on such varied industrial equipment as cigarette-making machines, textile machinery, metalworking machinery, pharmaceutical equipment, transfer tables, conveyors and experimental and testing equipment of many types.

Check these major Variator advantages:

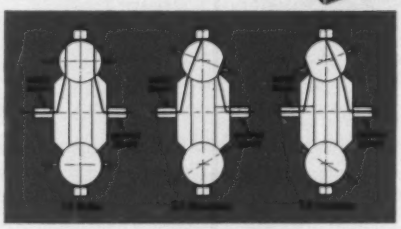
- An extremely compact unit with input and output shafts in line and rotating in the same direction
- Almost any input speed up to 1800 RPM can be used —either clockwise or counterclockwise rotation
- Rated for constant horsepower output over a 9:1 or 6:1 range; or for constant output torque over a 6:1 range
- Speeds infinitely variable over entire range of adjustment
- No slippage—positive torque response mechanism adjusts in direct proportion to the loads encountered
- Long life and minimum maintenance due to absence of belts or complicated linkages
- Ample bearing support for overhung pulleys on both input and output shafts

Write today for free Bulletin K-200 containing detailed description, photographs, sectional drawings, rating tables and specifications.

Cleveland Worm & Gear Division
Eaton Manufacturing Company
3270 East 80th Street • Cleveland 4, Ohio

Simple in Operation... Built for Long Life

The Variator is an extremely compact unit with input and output shafts in line, rotating in the same direction. It incorporates ample bearing support to carry overhung pulleys.



Power is transmitted from input shaft to output shaft through alloy steel driving balls which are in pressure contact with the drive discs. Relative shaft speeds are adjusted by changing position of axles on which the balls rotate.

CLEVELAND SPEED VARIATOR

Our Squander of The World Market

MANY U. S. manufacturers still believe that they are supreme in the industrial arena. . .

- Despite the sale of 600,000 foreign cars in the U. S. last year.
- Despite the sale of 1,229,400 imported sewing machines in this country last year.
- Despite the sale of Japanese flatware to 8 million U. S. women annually.
- Despite the fact that 7 out of 10 watches sold in the U. S. are made abroad.
- Despite the sale of 4.4 million tons of imported steel mill products to U. S. industry in 1959.
- Despite the fact that, in 1959, we bought more imported products than ever before—even used cars, 7 million Japanese brassieres, 973,000 baseballs, and the wire used to stitch the *Congressional Record*.

A U. S. textile executive had the seriousness of foreign competition brought home to him when he addressed a women's club.

He told of the danger to local industry posed by foreign competition. To bolster his point, he described a make of foreign sweater in detail, including the selling price. Before he could continue, a woman in the audience jumped up and asked: "Please, sir, do you happen to know where I can buy one?"

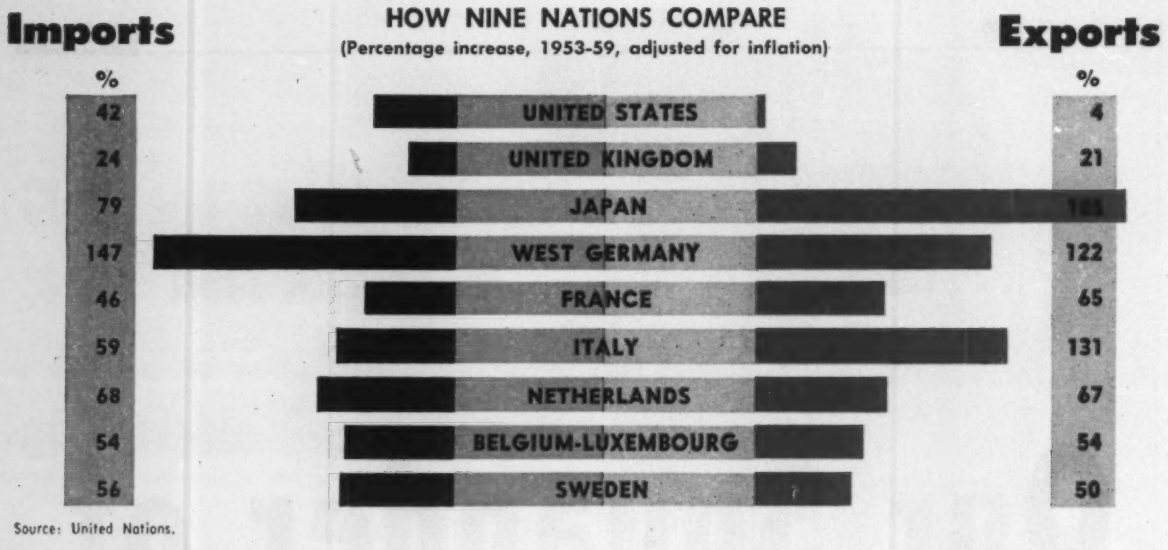
Foreign manufacturers, with a decided price advantage, a wealth of experience in international trade, and the aggressiveness of a cat after a mouse, have seized huge chunks of many U. S. markets.

And that's only half the story. U. S. manufacturers are failing to hold their traditional share of foreign markets. In 1956, U. S. exports of merchandise equaled $17.3 billion. Last year, the total was $16.3 billion—$1 billion less, although foreigners, with a rising standard of living, were buying more goods from around the world. In some industries, the market battle takes on a tone even more urgent than the over-all picture . . .

- U. S. makers can claim only 7 per cent of the world market for typewriters vs. 63 per cent in 1948.
- Exports of U. S. passenger cars are one-half the 1955 volume.
- For many years, a lathemaker could count on foreign sales for nearly 25 per cent of his business. Last year: 8 per cent.
- Industrial fastener exports dropped from $19.8 million in 1957 to $17.3 million in 1959.
- Exports by members of Resistance Welder Manufacturers' Association, who sell about 65 per cent of the industry volume, dropped from $1,662,052 in '57 to $790,297 in '59.

Exports Are Vital

We cannot afford the luxury of economic isolationism. While exports make up only about 4 per cent of our gross national product, they are vital to many industries. They account for one-fifth our output of trucks and machine tools, nearly one-third our output of civilian aircraft and construction and



Source: United Nations.

mining equipment, half our cotton.

"This nation cannot maintain its unique standard of living without foreign trade. As long as our budget is unbalanced, our external payments in the red, our trade under pressure of keen rivalry, our gold sharply diminishing, and our dollar in need of defense, we must sell abroad to live—or at least to live in the style to which we have become accustomed." So notes S. J. Rundt, international consultant.

He points out that in some respects, we too are a have-not nation. We urgently need such imports as iron ore, pulp, and scores of other materials. He says: "Without imports, our newspapers would have but four pages—or would cost $1. Automobiles, TV sets, refrigerators, which contain dozens of items which we don't have—or of which we have not enough—would become luxuries obtainable only by a few. And few of us could afford a telephone—composed of 48 different materials from 18 countries."

To import, we must export. And as long as our government continues its vast foreign aid program, we must export more than we import—or face the dismal prospect of currency devaluation.

So metalworking must take big steps fast to increase its share of the world market. How? Check the reasons for our losses.

Why We're Losing the Lead

Ask ten businessmen why the U. S. is failing to maintain its position in the world market. Chances are, at least nine will tell you it's because our wage rates are so much higher than those abroad. They've put their finger on a paramount factor (see Page 28), but they've given only a partial answer.

U. S. workers have been getting vastly larger pay checks than their foreign counterparts for decades. The threat from abroad began when Uncle Sam sent his purse—and some eager nephews—abroad to rebuild bombed and battered foreign manufacturing facilities after World War II. The more than $74 billion poured out in U. S. government aid and loans, plus another $33 billion in private aid and investments, helped give Europe and Japan the weapons with which to wage an economic war—with the U. S., their old ordnance officer, as the principal foe.

For example, after the war, an Italian businessman, armed with a $1 million donation from Uncle Sugar, was advised to establish a fastener manufacturing company. He called the president of a New York fastener firm for advice and got help in developing his plant layout, buying equipment, setting up systems and procedures. The Italian sent five top engineers to study the U. S. plant's methods; they went back to Italy and copied them—even to the tote pans. Says the president: "Today, that man is underselling me by 30 per cent in my own backyard—but he sends me two neckties every Christmas."

Crux: The U. S. helped build European and Japanese productive capacity and efficiency to the point where the wage differential has become extremely important. It was easy for us to compete with a foreign craftsman working with his hands in the dimly lit shop, despite the wage differential. But we're hard pressed to compete with a foreign plant that rivals or exceeds ours in efficiency, while we pay our workers 5 or more times as much as it does. As Donald L. Maggin, overseas planning director, Booz, Allen & Hamilton International, puts it: "We gave them the guts of their productive engine." For some countries, this massive rebuilding compressed 50 years of normal industrial evolution into a decade.

To that capability, grim necessity provided the spur. Nations like Japan, West Germany, Belgium, and others had to export to survive.

They have not only survived; they are flourishing.

We Must Blame Ourselves

Management ineptness, union gluttony, government foot-dragging are the real thieves in our loss of world markets. Examine these 21 sins that have contributed to the shakiness of our crown as the supreme industrial nation. . .

1. Labor's Shortsightedness—While their members' jobs are being cap-

tured by patriotic laborers abroad, U. S. unions seek concessions that are sure to force the loss of even more jobs. Take the 1959 steel strike. While David McDonald screamed for a billion dollar bundle (which he eventually got) and his followers militantly stayed away from their jobs for 116 days last year, foreign steelmakers shipped 4.4 million tons of steel products into the U. S.—enough to provide jobs for 35,000 workers. This year, the U. S. will again be a net importer of steel.

Union leaders must also share the blame for the thousands of jobs lost in other domestic industries due to foreign competition (see tables, Page 40). We're often noncompetitive due to outrageous union demands, featherbedding, and the lack of productivity behind wages.

2. Production Inefficiency—U. S. metalworking's failure to meet the $20 billion challenge is another reason for loss of markets. A STEEL survey finds that the industry would invest $20.7 billion in new production equipment to bring facilities up to date, if it had unlimited funds. But it will spend only $4.7 billion this year, another STEEL survey shows. The $16 billion deficit is rendering us noncompetitive with the rest of the world.

For example, compare the proportion of gross national product reinvested in the form of fixed investments by U. S. firms and those abroad. The U. S. averages about 15 per cent. Well over a dozen countries are reinvesting at twice that rate and a few highly industrialized nations are investing at three times that rate, says Northeastern University's Barkev Kibarian.

3. Rugged Tax Structure—One reason why metalworking doesn't buy the equipment needed for production efficiency is the federal government's outmoded depreciation policy. Our prime competitors—Japan, West Germany, Great Britain, Italy, France, Sweden, and the Benelux nations—all get better breaks on depreciation than we do.

4. No Government Aid—U. S. producers have no major export incentives and special tax supports as do many other nations.

5. Weak Competitive Spirit—"What has happened to the urge to compete and the willingness to get down to work? They seem to have given way to the age of the goof-off," Harvey Whidden of Bulova Watch Co. bemoans.

Some analysts of international trends blame U. S. market losses on the oligopolistic practices (power concentrated in the hands of a few) in some domestic industries, which, they say, tend to render us inherently noncompetitive. Listen, for example, to George Donat, manager-overseas market research, Parke, Davis & Co.: "I have a hunch that

Where Has Foreign Competition Hit Us?

Every segment of metalworking is affected, STEEL's editors learned in their research for this special issue. Examine the range of these examples . . .

STEEL—"The American steel industry in certain areas is no longer competitive with the rest of the world."

—A. F. Franz, president, Colorado Fuel & Iron Corp.

SHIPBUILDING—U. S. customers are having 130 tankers built in foreign yards. The 3.75 million gross tons represents U. S. yard losses of $1.3 billion in sales, $492 million in wages (without benefits), jobs for 91,000 men for a year.

—Nation-Wide Committee on Import-Export Policy

AUTOS—At least 76 varieties are being marketed in the U. S.

MACHINE TOOLS—The percentage of the domestic market for general purpose machine tools claimed by imports has risen from 6.3 per cent in 1955 to 17.5 per cent last year.

—National Machine Tool Builders' Association

ALUMINUM FOIL—Last year, we imported more than 9 million lb.

SCISSORS & SHEARS—Imports valued at more than 50 cents a dozen soared from 150,000 in 1949 to more than 8 million in 1959.

—Shears, Scissors & Manicure Implement Manufacturers Association

HEAVY ELECTRICAL EQUIPMENT—U. S. government agencies have purchased this equipment abroad: 24 generators, 355 transformers, 81 power circuit breakers, 14 hydraulic turbines.

—National Electrical Manufacturers Association

JEWELRY—Imports have more than 25 per cent of the domestic market.

WATCHES—Employment in the U. S. watchmaking industry has dropped from 16,000 to 6000 as imports have garnered 70 per cent of the domestic market.

WRENCHES—The inventor of a new wrench asked for bids from U. S. firms, got quotes ranging from $2.18 to $2.87 for an 8-in. size. He then got bids from West Germany, Japan, and Formosa. Prices for identical wrenches laid down in New York or San Francisco, duty paid, were 67 cents to 70 cents. The order went to Japan for 4000 gross of each of four sizes.

UMBRELLA FRAMES—The domestic industry has been reduced from six companies to three. U. S. firms claim little more than one-fourth the domestic market.

—Nation-Wide Committee on Import-Export Policy

FLATWARE—In 1955, imports equaled 21 per cent of domestic production; in 1958, the import figure rose to 57 per cent.

WATCHBANDS—U. S. producers employed 7000 workers in 1954 in a $32 million industry. Imports have taken over half the market, reduced a 40-company industry to 20, wiped out about 5000 jobs.

—Nation-Wide Committee on Import-Export Policy

RADIOS—Japan shipped $62.4 million worth of radios, chiefly transistor portables, into the U. S. last year.

—Electronic Industries Association

MACHINERY—Imports as a percentage of exports rose from 2.4 per cent in 1947 to 16.7 per cent in 1959.

—Machinery & Allied Products Institute

Look How U. S. Jobs Have Vanished Since 1956

our problem is not so much the threat of foreign competition but essentially our resistance to the idea of competition at all." He points out that the extent of concentration in five leading U. S. industries ranges from four companies claiming 50 per cent of industry sales to three companies holding 82 per cent.

6. **Inflexibility**—Mass production and distribution structures for our huge domestic market make us inflexible when it comes to special efforts, like a special model for one foreign market.

7. **Export Laxity**—Too many U. S. companies look upon their foreign operations as an "appendage," a place where they can "put old executives out to pasture," charges James A. Newman, partner, Booz, Allen & Hamilton. We must learn to think in terms of one, worldwide, integrated, organization.

8. **Indifference**—The "Ugly American" is a real—and detested—person in many areas abroad. We've failed to take a sincere interest in the people we are coaxing to be our customers. We don't even learn their language, in many cases. A survey shows that half of our foreign service officers, including 70 per cent of the new men, have no speaking knowledge of any language other than English.

9. **Aloofness**—Here's another way that we earn the "Ugly American" tag. U. S. personnel abroad frequently set up their own "little America." The Europeans are careful not to do that. They mingle with the nationals, maintain a common ground, Mr. Maggin reports.

10. **Weak Credit Terms**—U. S. firms have lost many sales to foreign companies on the basis of credit extension. We are failing to use one of our most important advantages—great financial power and commercial credit knowhow.

11. **Poor Market Research**—U. S. firms have waded into foreign markets without even an estimate of market size or the kind of competition they could expect to face.

12. **Faulty Design**—This has been one of our biggest downfalls. Time was when U. S. design—like U. S. foreign policy—could afford the lux-

Steel Mill Products

	TONS
1956 Exports	4.2 million
1959 Exports	1.5 million
Loss to U. S.	2.7 million
1956 Imports	1.3 million
1959 Imports	4.4 million
Loss to U. S.	3.1 million
Total Loss	5.8 million

Jobs Lost – 46,400

Job losses based on industry experience of 16 manhours to produce 1 ton. If you use 1957 as the base year for computations, jobs lost would total 55,280.

Passenger Cars

	UNITS
1956 Exports	174,895
1959 Exports	104,384
Loss to U. S.	70,511
1956 Imports	107,675
1959 Imports	668,070
Loss to U. S.	560,395
Total Loss	630,906

Jobs Lost – 39,400

Job losses based on industry estimate of 125 manhours to build a standard car. The foreign car invasion really got underway in 1955. Job losses since 1954 total 45,200.

Typewriters

	UNITS
1956 Exports	116,940
1959 Exports	50,601
Loss to U. S.	66,339
1956 Imports	275,887
1959 Imports	469,729
Loss to U. S.	193,842
Total Loss	260,181

Jobs Lost – 1600

Job losses are computed on industry experience that 65 per cent of cost is labor. In this industry, imports started to get their stranglehold on the world market shortly after World War II. Job losses since 1949 total 6200.

Brass Mill Products

	POUNDS
1956 Exports	11.3 million
1959 Exports	13.3 million
Gain to U. S.	2.0 million
1956 Imports	88.6 million
1959 Imports	199.4 million
Loss to U. S.	110.8 million
Net Loss	108.8 million

Jobs Lost – 1550

Job losses figured on industry estimate that it takes one man one year to produce 70,000 lb of product. In this industry, the import buildup began in 1952. Jobs lost since then total 2150.

ury of isolationism. Our firms had only to meet the needs and tastes of Americans to succeed. For the most part, the export manager just changed the nameplate, then tried to peddle the item abroad. But, in the last five years, two things have happened: 1. Foreign designed and manufactured products have cracked the U. S. market—in some cases, setting our designers back on their blueprints. 2. U. S. designed products have lost out, in third markets, to foreign competitors who have changed designs to suit local needs.

Sewing Machines

	UNITS
1956 Exports	38,416
1959 Exports	15,768
Loss to U. S.	22,648
1956 Imports	869,000
1959 Imports	1,229,400
Loss to U. S.	360,400
Total Loss	383,048

Jobs Lost — 1300

Job losses computed on informed estimate that 70 per cent of cost is labor. In this industry, foreign competitors started to get their stranglehold on the world market after World War II. Job losses since 1949 total at least 4200.

Job Losses Snowball

Huge as these job loss figures are, they only tell a small part of the foreign competition story. The pattern prevails in other industries. And the figures don't point up secondary job losses. For example, when you consider manhours required to produce the major parts that go into an automobile, the number of manhours needed to make a passenger car jumps from 125 to 187—boosting job losses due to imports from 39,400 to 59,000. And that doesn't consider job losses due to the trim, accessories, and other components.

Listen to an official of Lippincott & Margulies Inc., New York industrial design firm: "A new force—working silently and powerfully to make the word 'imported' synonymous with 'good'—is superior product engineering, superior production quality control, plus design that conveys these things to the customer in fresh, imaginative ways. Foreign nations have gone out of their way to study the special needs of each country before putting their products on sale. They know what will sell, where, and for how much."

13. Sloppy Service—L. F. McCollum, chairman, National Export Expansion Committee, and president of Continental Oil Co., Houston, back from a European tour, says foreign firms complain that U. S. exporters are slow to answer correspondence, fail to give needed technical data, and that, in many firms, there seems to be no liaison between the export manager and the departments supplying advertising, service, and technical aid.

14. Messy Marketing—Our selling methods are often much too vigorous for non-Americans. Exaggerated enthusiasm or excessive superlatives are sure to earn you a bad reputation in most foreign lands. "Second to none, we believe," is usually a far safer appraisal of your goods than "the biggest and best."

15. Import Restrictions—Artificial—and often discriminatory—restrictions against U. S. goods by many foreign countries have contributed somewhat to metalworking's loss of foreign markets.

16. Gentle Blackmail—"If you want to sell here, you'll have to manufacture here." That's what more and more countries are telling U. S. firms, as nationalistic feelings grow around the world. Take Singer's experience in Mexico. It had an assembly plant there. The Mexican government asked the company to build an integrated facility within three years. Singer got the time extended to four years—and will then export nothing to Mexico. Besides that, the Mexican government demands that Singer and other big plants supply parts to small competing firms in the country. It's a case of keeping a competitor in business.

17. Blindness—Foreign markets have frequently been lost to U. S. firms because they failed to recognize the potential. For example, the best time to have moved into the European Common Market was 1955-56. Or take the case of a firm's failure to recognize that an item useless in one place can have great value elsewhere. One enterprising trader noted that the toad population was diminishing in Dominica—where the bouncy beasts are the national dish. He became a successful toad trader.

18. Foreign R&D—Foreign countries have stepped up their research and development in the last few years; their shift from copiers to innovators has already affected some metalworking markets. Take Tokyo's Sony Corp., for example. It'll spend nearly $1.5 million this year on its 400 man research program aimed at creating new products. That's about 4 per cent of estimated sales—and more than is done by most U. S. firms. Payoff: Sony sells about 20 per cent of its output in this country.

19. Foreign Promotion—"Europeans have learned our advertising techniques and have combined them with stylish and imaginative material," Ford Motor Co. points out. Volkswagen and Renault offer proof.

20. The Red March — Communist advances have also contributed to our world trade shakiness. Exports by all nations in 1959 totaled $114 billion. Sales by Communist nations made up $14 billion (including trade among the Reds themselves). European Soviet Bloc exports to Western Europe totaled $1.35 billion, the United Nations reports. Red China sold $145 million worth of goods in Western Europe, bought $325 million worth there.

And the trade offensive is bound to become more rampant. Nikita Khrushchev was dead serious last year when he roared: "We declare war. We will win over the U. S. The threat to the U. S. is not the ICBM but in the field of peaceful production. We are relentless in this and will prove the superiority of our system."

Comments Mr. Rundt: "This appears to be the first case in recorded history where one world power, without ambiguity and publicly, has proclaimed the existence of a struggle unto death against another world power, and where the chal-

MEET KIYOSHI KAWAGOE

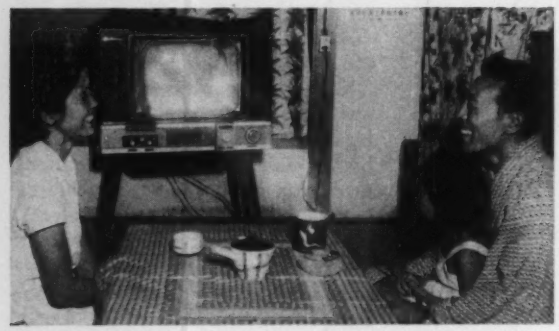
(Who Could Replace a Man in Your Plant)

AT EXACTLY 4 p.m., six days a week, Kiyoshi Kawagoe shuts down his 2½ ton forging press at Mitsubishi's Motor Vehicle Works in Tokyo, takes a hot bath, changes his clothes, and heads home on an electric commuter train.

He arrives at his three room, tile roofed house 45 minutes later, where he is greeted by his attractive, 29-year-old wife, Chiyono, and their polite, petite daughter, Fumiko. Most days, he'll immediately care for his tiny garden; then (after removing his shoes and felt slippers), he'll have his dinner of fish (sometimes meat), vegetables, and tea. In the evening, he'll play with his daughter and watch TV. And he may have a little sake (rice wine). He smokes about 20 cigarets a day. He retires early because he must be at the plant at 7:45 a.m. to change clothes and be at his work station at 8 sharp. And he always eats breakfast first—hot boiled rice (sometimes bread and butter), bean paste soup, and pickles.

He operates a forging press from 8 till 12 (no coffee break). He has lunch in the plant cafeteria (paid for by his employer) and is back on the job promptly at 1 p.m.

His base wage is 10 cents an hour. His starting wage (February, 1951) was 4.2 cents an hour. He also receives Japan's customary bonuses in July and December, which add $333.34 to Mr. Kawagoe's annual earnings. And he gets family allowances—$1.67 monthly for his wife and $1.11 for each child. (Maximum allowance is $6.12 in Japan.) He also earns efficiency pay, a hazardous duty allowance (2.2 cents an hour), and overtime pay for about 50 hours a month. His average monthly pay is $77.78, and after income taxes, insurance, and the like, his takehome pay averages $55.56 a month. A Mitsubishi official estimates fringe benefits cost $13.98 a month per employee (including free lunch, medical care, and commuter tickets). Mr. Kawagoe works 42 hours a week.



With his wife, Chiyono, and older daughter, Fumiko, 4, he watches a Japanese Western on the family's highly prized TV set—a luxury model with three speakers that cost $194.44. He would like to own a car, but at $2000 it's just a dream. He did buy an electric washing machine—for $55.56, about equal to one month's takehome pay

Clad in a "yukata" or summer kimono, he plays with three-month-old Kimiko in the "yojo-han" tatami room. The family rents a house (two rooms and a dining-kitchen) for $6.12 a month. It's in a 30 home development surrounded by vegetable fields and rice paddies. The house, is a little larger than the typical U. S. livingroom

lenged nation, for all practical purposes, at least to start with, has selected all but to disregard the state of war. If this had been done militarily, A Soviet fleet might lie off Manhattan, and in due course, the Red army would conceivably bomb St. Louis or occupy San Francisco.

"Although the Reds have parlayed some 8.8 million square miles with 171 million people into 13.5 billion square miles with 945 million people since 1940, and although they have more recently scored notable victories in Afghanistan, Korea, Indo-China, Egypt, Syria, Indonesia, and Lebanon, our do-nothing attitude remains basically unchanged. While the Communist business drive is getting hotter by the day—in Latin America, in Asia, in Europe, in Canada—our complacency is interrupted chiefly by talk.

"Meanwhile, Red China is dumping tractors of good quality in south Asia; Moscow has at its disposal $8 billion in gold and an annual production of the precious metal greater than that of South Africa; Poland

Mr. Kawagoe can buy food, clothing, furniture, and a wide variety of other items at the Kawasaki plant commissary, usually at prices 20 to 25 per cent below those charged by the town's retail stores. He and his family swim in the company pool, use its tennis courts and athletic grounds. Twice a year, the company invites its workers and their families to a variety show.

Mr. Kawagoe belongs to the All Mitsubishi Labor Union, but says he takes no interest in union activities. A coworker likes the union "because it promotes labor-management co-operation."

Mitsubishi's plants are highly mechanized; islands of automation are spotted everywhere. And the firm has adopted the suggestion system. Mr. Kawagoe hasn't participated yet, but other workers have earned $2 to $100 for their ideas.

Should Mr. Kawagoe become ill, he'll get free medical care at the plant hospital. Members of his family can also receive care at the hospital, but Mr. Kawagoe must pay half the cost for them. If Mr. Kawagoe's illness is long term, he'll get medical care plus 70 per cent of his base wage for six months, then 60 per cent for another six months. After that, he'll be asked to resign. If he is injured on the job, he'll get full base pay plus medical care until he is well.

Mr. Kawagoe doesn't have to worry much about job security. Hardly ever is a man fired in Japan—and almost no one quits. One reason: Seniority and age are the most important factors in determining a man's wage. The lack of turnover that results has required most companies to keep the compulsory retirement age quite low—usually between 55 and 60.

On his way home from work, 5 ft 6 in. Mr. Kawagoe is dwarfed by the giant Fuso trucks he helps to build. Some are exported—600 diesel buses went to Chile recently. While other Mitsubishi products are exported to the U. S., the trucks haven't yet been brought into this country. If they are shipped here, Mr. Kawagoe will have replaced a U. S. worker.

has been the chief supplier of coal to Argentina; East German typewriters are on a victory march through Brazil; the Reds have bought up glutted commodities from Burma to Uruguay and Ceylon to Canada, thereby doing exactly the opposite of what we do with our dumping of farm surplus goods, at least in the eyes of many producer nations; Soviet steel in most varieties is now as good as ours."

21. **Lack of Knowledge**—The "Ugly American" is also, in many cases, an ineffectual American. Mr. Rundt reports that an increasingly higher type of man is being sent overseas, but that "some pretty odd numbers continue to do harm to their employers and their country." Among them, he says, are "various sorts of beachcombers, dipsomaniacs of most shades, expatriates who have lost all contact with home base, colonial masters, supermen with un-American ideologies, and little commercial bureaucrats who vegetate in a vacuum because they detest or fear their surroundings."

Some businessmen still follow such thoughtless practices as sending Christmas greetings to their Moslem customers. Or, as Mr. McCollum points out, they'll quote prices in dollars f.o.b. internal U. S. cities—which is a sure way to lose the sale. What does "$10,000, f.o.b. Schenectady" mean to an Iranian?

How Fast Recovery?

Last year, the U. S. reached a postwar low in world trade superiority when only $1.1 billion separated us from an unfavorable balance of trade. This year, the gap will widen to around $2 billion—but a sizable portion of the predicted rise in exports will be accounted for by delivery of commercial jet aircraft to foreign airlines and another big chunk will be in overseas sales of U. S. surplus cotton at disposal prices. Since those sales are not likely to be repeated in 1961, our climb in exports will be just about equal to the rise in imports. So we are barely holding our own. And the long range picture is far from bright. Russia can be expected to enter the world market with more and more manufactured goods. The result "will make today's battle for customers look like an old ladies' whist and tatting party," asserts one foreign trader.

With renewed effort—and provided we get cracking now—the U. S. can regain its world market position. But doing that will require a historic economic mobilization.

• **Less Goods, More Brains**—W. L. Mather, head of Mather & Platt Ltd., Manchester, England, machinery firm, believes that, before long, the U. S., Britain, Russia, and other leading powers will be exporting less goods and more knowhow. The underdeveloped countries of the world are the markets of the future, he declares. Their people are becoming more educated, more prosperous, and more ambitious, and will soon want their own industries. Their major imports then will become capital equipment, technical aid, and financial assistance.

• **Big Battleground**—The blue chip competition of the 1960s will be waged in third markets (vs. highly industrialized nations). Africa, for example, is one of the world's biggest, long range, potential markets.

The Challenge

In many fields, we are pricing ourselves out of the world market. We also are committing international sins that cost us sales we could otherwise obtain. Automation, mechanization, containerization, and simpler models for export will have to go a long way to help offset wage differentials. And it's imperative that we use all our knowhow, our research, and the advantage offered by our huge domestic market to bring down our production costs. Management must learn to defend itself against irresponsible union demands. Market diversification is now more necessary than ever. We must erase the image of the Ugly American. We must learn to tailor our products, our attitudes, our marketing approach to widely varying and ever changing needs and tastes. We must adopt a global concept in all our planning.

Our Government's Trade Policies Obsolete

FEDERAL failure to recognize new world market conditions is charged by the majority of 200 industrialists queried by STEEL.

"Washington is helping — or hurting—industry in today's foreign trade war with weapons as obsolete as the Wright brothers' airplane," says a New England manufacturer.

Especially criticized by the metalworking executives: Our depreciation laws that are the most archaic among industrial nations of the earth; haphazard foreign aid; and a poorly trained diplomatic corps (in 54 countries where U. S. career ambassadors have posts, 24 are not fluent in the native language). Industry's managers believe that we need, above all, a coordinated and integrated attack from the administration and Congress.

The executives seek intelligent aid that is consistent with their emphasis on self-help. The majority want our government to:

- Arrange for low cost financing of exports and provide low cost insurance against political risks faced when investing abroad.
- Assist with long term credit needed to combat foreign competition in third markets—a need that could become a national urgency when the Communists really get into exports.
- Get other industrial nations to step up their aid programs to the Middle East and Asia. (That would give those nations more money to spend in world markets and help alleviate our balance of payments problem.)
- Tie our foreign aid to purchases in this country with those dollars.
- Get importing countries to liberalize import restrictions on our goods.
- Make it easier for U. S. firms to accept payment in currency other than dollars.
- Seek and make available to U. S. firms more information on foreign markets.
- Place better trained and more effective people in diplomatic posts abroad—to help wipe out the "Ugly American" image that injures U. S. sales.
- Permit U. S. firms to pool their resources when bidding on a foreign job.
- Set up clearing arrangements to use the commodities that now glut some markets—farm surpluses, for example.
- Revise tax policies—especially outmoded depreciation rules.

Dirksen May Provide Forum

The best near term opportunity for industry to present its views may be provided if S.J. Res. 208 is passed in the next session. It's a resolution by Sen. Everett M. Dirksen (R., Ill.), Senate minority leader.

It calls for the creation of a 12 man commission to make a year's study of the impact of foreign competition on U. S. markets. Representatives of industry, labor, agriculture, government, and trade would be included. The chairman and vice chairman would represent the public. Appointed by the President, the commission would report to him by July 1, 1961. Perhaps $1 million would be needed to finance the study.

One of the purposes of Senator Dirksen's commission would be to gather information for the guidance of Congress in appraising the Reciprocal Trade Agreements Act. It comes up for renewal in 1962.

What Will New President Do?

Neither the Democratic nor Republican platforms are specific about foreign trade remedies. And neither Presidential candidate has had much to say about the issue.

Sen. John Kennedy's voting record on reciprocal trade and foreign aid has lacked consistency, but, recently, he has voted the free trade line.

As vice president, Richard Nixon hasn't had the chance to vote often enough on these matters for any significant conclusions to be drawn.

The only politician of national stature who thus far appears determined to make foreign competition a national issue in November elections is Sen. Barry Goldwater (R., Ariz.).

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Better grinding evident in fast stock removal with less wheel wear! That's why Simonds Snagging Wheels get the nod of approval in leading foundries, steel mills and metal-working plants. Resinoid bonded wheels contain a special additive that provides an internal lubricant for better grinding action . . . and are identified by new short markings, A166-R, C16-S, etc. Vitrified bonded wheels for gray iron contain V9 Bond, a chemically designed glass bond for greater uniformity and consistently superior performance.

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FIGHT FOR SURVIVAL

Our Competitors Build Their Muscles

OUR LEADERSHIP in the world market place is threatened by nations that have risen from the rubble of World War II in a short 15 years.

What's more, the competition will get progressively stronger in the sixties. Look at these projections made by McCann-Erickson Inc.:

- By 1970, Western Europe's industrial output is expected to rise 70 per cent over the 1958 level.
- Common Market production gains may exceed 80 per cent.
- The increase of national output in West Germany, the United Kingdom, Italy, and France will climb 64 to 94 per cent.
- Japan's output may double by 1970.

• **Production Leaps**—Foreign production is booming (see tables). World markets have absorbed much of the output because business has been generally good. But as demand levels out, our foreign competitors will become increasingly aggressive in exploiting U. S. world markets.

What's behind the upsurge?

Key factors include: Necessity, the will to grow, capital spending, modern facilities, building a reputation for quality, low prices, marketing savvy, government aid, aggressive research and development, and foreign investment.

• **Out of Necessity**—Immediately following World War II, goods were imperatively needed to rebuild

How Income, Production Grew 1953-59

Country	National Income (Percentage increase)	Manufacturing Production (Percentage increase)
U. S.	30	14
Japan	58	120
West Germany	70	65
France	66†	62
Italy	50†	59
Netherlands	66	40
Canada	34	18
Luxembourg	33	32
United Kingdom	39	24
Sweden	47†	21
Belgium	27†	28

Source: United Nations.
†Estimated.

Production Figures Reveal . . .

UNITED KINGDOM

	1950	1959	% Change
	(Thousands of tons)		
Hot rolled steel products	13,460	16,616	+ 23%
Light sections	2,714	3,109	+ 15%
Strip	1,134	1,602	+ 41%
Sheets (under 0.12 in.)	2,621	4,102	+ 57%
Cold rolled sheets	748	1,663	+122%
	(Units)		
Tractors	150,488	215,763	+ 43%
Typewriters	130,792	275,868	+111%
Passenger cars	522,515	1,189,944	+128%
	(Millions of dollars)		
Accounting and similar machines	31.6	94.0	+197%
Machine tools	112.2	220.5	+ 97%

FRANCE

	1950	1959	% Change
	(Thousands of tons)		
Hot rolled steel products	7,107	12,723	+ 79%
Sheets (under 0.12 in.)	1,059	3,219	+204%
Cold rolled sheets	130	2,082	+1,502%
Welded and seamless tubing	400	1,013	+153%
	(Units)		
Passenger cars	257,000	1,085,172	+322%
Radios	963,000	1,688,400	+ 75%
Tractors	30,864**	106,008	+243%
Television sets	5,000	500,400	+9,908%
	(Millions of dollars)		
Machine tools	74.0***	166.5*	+125%
Washing machines	5.6	118.5*	+2,016%

*1958. **1952. ***1951.

BELGIUM

	1950	1959	% Change
	(Thousands of tons)		
Hot rolled steel products	3409.0	5676.0	+ 67%
Light sections	1213.3	1957.2	+ 61%
Plates (over 0.12 in.)	408.1	679.8	+ 67%
Sheets (under 0.12 in.)	435.6	1152.8	+165%
Wire	341.0	588.5	+ 73%
	(Millions of dollars)		
Contractors' machinery	3.5	4.6	+ 31%
Electrical equipment	60.2	75.0	+ 25%
Agricultural implements	7.7	16.8	+118%
Material handling equipment	3.6	11.0	+206%
Radio and television sets	13.0	57.5	+342%

ITALY

	1950	1959	% Change
	(Thousands of tons)		
Hot rolled steel products	2,140	6,647	+211%
Light sections	802	1,674	+109%
Wire rods	246	608	+147%
Sheets (under 0.12 in.)	256	1,159	+353%
Cold rolled sheets	53	957	+1,705%
	(Units)		
Passenger cars	172,800	470,661	+172%
Sewing machines	270,000	472,036	+ 75%
Typewriters and calculators	413,166*	679,905	+ 65%
	(Millions of dollars)		
Television sets	1.6**	67.0***	+4,088%
Refrigerators	.....	68.2***	...

*1955. **1951. ***1958.

industry and restore standards of living. The programs were backed by private capital, the national governments, and billions of dollars in U. S. aid. In some countries, 30 to 50 years of normal industrial evolution were compressed into a single decade.

• **Will to Grow**—The "false security of stagnation" is gone in Europe, says Raymond Aron, a French political commentator. The two trading blocs, the Common Market and the European Free Trade Association, are adding momentum to European expansion by lifting trade barriers within the groups.

A group of French graduate students who recently toured the U. S. brought the point even closer to home: "In our opinion, the French worker works much harder than his American counterpart and is much more attentive to his machinery and his operation—and perhaps prouder of his place in the productive pattern."

• **Capital Spending**—The proportion of gross national product that countries reinvest in plant and equipment is an indicator of growth. By that standard, more than a dozen countries are reinvesting twice the amount we are as a percentage of GNP. Between 1955 and 1959, the European Coal & Steel Community members alone made capital expenditures of $3 billion in iron and steel facilities.

• **Modern Facilities**—Foreign production techniques and facilities are in most cases as good as ours. Some are better. Many plants had to be rebuilt from scratch after the war —there are no obsolete facilities in

Where Your Competitors Are Growing Fastest

SWEDEN

	1950	1959	% Change
		(Thousands of tons)	
Hot rolled steel products	993.3	2,033.9	+105%
Strip	67.1	144.1	+115%
Light sections	346.5	786.5	+127%
Railway track material	35.2	169.4	+382%
		(Millions of dollars)	
Machine tools	12.9	18.7*	+ 45%
Construction equipment	25.1	62.7*	+151%
Office machines	12.9	38.9*	+202%
Telephone and telegraph apparatus	24.1	67.1*	+179%
Internal combustion engines	27.8	85.2*	+206%
		(Units)	
Passenger cars	16,712	96,800	+479%

*1957.

WEST GERMANY

	1950	1959	% Change
		(Thousands of tons)	
Hot rolled steel products	11,037.0*	24,275.0*	+120%
Plates (over 0.12 in.)	1,295.8	3,851.1	+197%
Cold rolled sheets	138.6	1,588.4	+1,046%
Agricultural machinery and implements	84.9	289.1	+241%
		(Units)	
Passenger cars	297,000	1,356,285	+357%
		(Millions of dollars)	
Refrigeration, air conditioning	34.5	247.6**	+618%
Internal combustion engines	39.0	214.5**	+450%
Machine tools	89.0	410.9**	+362%
Road construction and mining machinery	136.7	623.0**	+356%
Rotating electric plants	77.5	297.9**	+284%

*Includes Saar. **1958.

JAPAN

	1952	1959	% Change
		(Thousands of tons)	
Hot rolled finished steel	5,369.1	13,298.8	+148%
		(Units)	
Electric refrigerators	3,588	545,483	+15,103%
Television sets	197	2,851,178	+1,193,391%
Washing machines	15,120	1,169,282	+7,633%
Passenger cars	4,680	77,608	+1,558%
Radios	939,312	9,965,536	+961%
Sewing machines	1,260,288	2,552,983	+103%
Diodes and transistors	.....	118,815,157	...
		(KVA)	
AC generators	869,352	3,237,549	+272%
		(KW)	
AC motors	1,111,980	3,423,755	+208%

Red Europe's Production of Hot Rolled Steel Products

Country	1950	1959	% Change
		(Thousands of tons)	
Czechoslovakia	2,376**	4,421	+ 86%
East Germany	854	2,697*	+216%
Hungary	560**	1,538	+175%
Poland	1,942**	4,694	+142%
Rumania	426**	696***	+ 63%
USSR	....	42,261***	...
Yugoslavia	329**	1,053	+220%

*Estimate. **Includes finished steel castings and forgings. ***1958.

such plants. Example: Schiess A.G., Dusseldorf, the continent's largest machine tool builder, has production equipment averaging only six to seven years old.

• **Image Building**—The U. S. buyer is now associating "imported" with "good quality." Witness the gains made by Japan. Her reputation for low grade toys has been offset by quality craftsmanship on such items as cameras and radios.

• **Prices, Marketing** — The low prices and the marketing savvy of our foreign competitors are adding impetus to their economies. Many of them have to export to survive, and their world marketing approach puts many U. S. efforts to shame. (See Page 37.)

Europe is gradually going to specialty manufacturing (vs. integrated), observes James A. Newman, partner, Booz, Allen & Hamilton. Firms which are integrated, such as Fiat, the Italian auto builder, plan to change as soon as the Common Market tariffs are eliminated. Their goal: Take advantage of manufacturing conditions in member countries to get the best job at the lowest price.

• **Governments Play Key Role**—Most foreign governments are closely tuned to the needs of their industries and provide many forms of tax help. In some countries, for example, industry can completely write off machinery in five years, up to 50 per cent in the first two years. Corporate taxes are often lower than ours. In addition, foreign governments are frequently assisting their industries in granting credit terms that domestic firms

VOLKSWAGEN:
Portrait of a Successful Competitor

One of the all-time success stories in cracking the U. S. market features the beetle shaped Volkswagen. It won its niche with a formula that's simplicity itself: Sharp, efficient marketing of a good product priced to attract budget minded Americans.

The results: Sales of VW passenger cars have leaped each year since commercial imports started arriving in the U. S. in 1953. Coming up: A new record in 1960. VW now has 2 per cent of U. S. passenger car registrations and 28.46 per cent of U. S. foreign car sales. It has 6.4 per cent of the domestic market for trucks in the up to 6000 gross vehicle weight class.

• **All Over World**—What's true of the U. S. can be echoed for the other 119 countries in which Volkswagen operates. VW exports more than one-half of its passenger car output and two-thirds of its truck production. It expects its percentages to rise sharply.

VW follows local custom in its marketing. "In the U. S., this means good, classic, American salesmanship; advertising; ready availability of spare parts; convenient repair and service facilities," says Carl H. Hahn, general manager of Volkswagen Corp. of America.

VW sells direct to 15 distributors, each of whom has the responsibility for 10 to 50 dealers. Dealers are carefully screened.

Volkswagen makes sure that dealerships don't become too large. It doesn't want them to lose the "common touch." (The average dealer sells 250 to 350 cars a year.) VW takes charge of training dealer mechanics; it requires one mechanic per 100 cars.

Backing up local sales efforts is a team of highly trained managers. In 1945, Volkswagen was the only firm producing autos in Germany, so had its pick of the executive crop. A training program for middle managers and a college recruitment program that sees trainees start in the factory and work up into supervisory jobs came later. VW regularly assigns its managers to overseas offices. The current U. S. sales promotion manager will spend 18 months here, then go back to Germany as corporate export sales promotion manager.

Company-wide, VW's philosophy is to have a small, hard core of highly trained managers. Clerical personnel are held to a minimum. VW employs 60,000; only a few of them are whitecollar workers.

In foreign operations, the procedure is to use as many nationals as possible. U. S. employees, mainly dealers and their staffs, number 10,000.

• **Sensible Depreciation Helps**—Part of VW's success can be credited to two advantages no U. S. company has: 1. Until this year, Volkswagen was a company without an owner (it was run by a Nazi labor union during World War II) so the bulk of profits were plowed back into the company. 2. Under Germany's fast writeoff depreciation system, management is able to modernize about as rapidly as it wants. In the last five years, it has added more than $319 million worth of assets and has written off about $150 million. Result: 92 per cent of VW's production equipment is post-World War II; more than 65 per cent is less than four years old.

• **A Two Way Street**—Volkswagen officials, sensitive to "Buy American" programs, are quick to point out their company is one of the best overseas customers the U. S. has. VW buys more from the U. S. than from any other foreign nation (France is second largest). It buys almost all of its machine tools from the U. S. and claims to purchase about 1 per cent of the U. S. output. The Wolfsburg plant uses 140 tons of American steel plates a day. Total VW purchases in the U. S. run about $1 million a month.

• **What VW Expects**—Volkswagen is forecasting a 25 per cent jump in sales in the U. S., 1960 vs. 1959. Dealerships, now at 500, are expected to top 600 before yearend. Production is 3550 cars and trucks a day. Expansion of capacity will continue. Research and development expenditures will average about 2 per cent of gross sales.

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can't match. Because of its government's help, a Japanese firm was recently able to bid on a heavy equipment order for South America, offering terms of no money down and no payments for three years.

• **Research Gathers Momentum** — Foreign firms are not about to slacken their efforts to boost business. Last year, Japanese firms invested $111 million in research, 14 per cent more than the 1958 figure and double the 1954 expenditure.

August Thyssen-Huette A.G., German steel manufacturer, has opened a modern technical center and chemical laboratory designed to cut production costs, boost productivity, and maintain high quality products. The firm, like most other European steelmakers, is concentrating on the development of long range raw material sources throughout the world.

Japan Steel & Tube Co. opened a New York office two years ago to funnel information on steelmaking advances, new products, and potential markets back to Japan.

• **Investment Tactics**—Foreign investments in the U. S. alone rose 85 per cent from 1953 through 1959 —$17 billion to $37 billion. That compares with a 90 per cent increase—$33 billion to $63 billion—for U. S. investments overseas during the same period.

• **Big Test Coming**—What will happen when productive capacity catches up with local demand?

Put yourself in the position of the foreign metalworking manager when the European boom begins to slacken.

1. You've got excess modern, low cost, production capacity.

2. Your products are good, priced competitively.

3. Your country needs exports to stay alive, and your government provides you with tax and resources incentives to export.

Where'll you look for sales first? To the U. S., of course, the world's biggest, richest market. Then we'll really feel the bite of foreign competition.

Lock seaming ceases to be a problem when you use Weirkote Zinc-Coated Steel. This modern continuous-process tightly bonded zinc-coated steel won't peel, chip or flake. Work it to the limits of the steel base itself and the zinc coating remains intact assuring you of the complete corrosion protection that only zinc can give. A Weirton representative will be happy to supply more complete information on Weirkote—another fine product of the Weirton Steel Company, Weirton, West Virginia.

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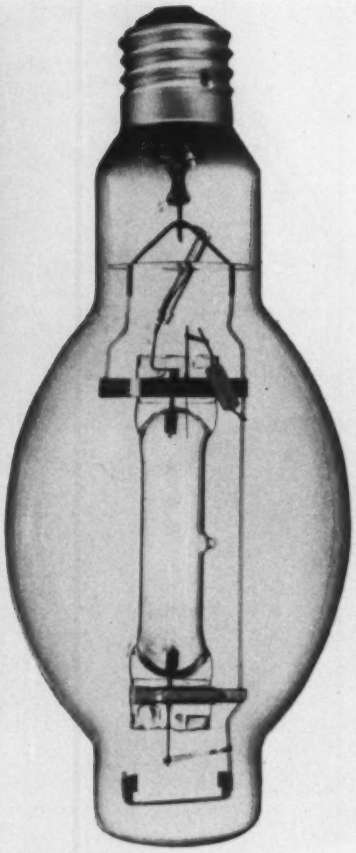

New G-E "Bonus Line" Mercury Lamps. 6000 extra hours! That's the bonus your customers get in every 400-watt G-E "Bonus Line" Mercury Lamp . . . and a minimum of 3,000 hours extra in the other wattages. One look at these two light-producing arc tubes and you can see why General Electric "Bonus Line" Mercury Lamps are their best bargain. See how the one from a G-E Lamp stays white? That's because its special electrode doesn't deposit a *black* coating, but a translucent *white* coating that lets the light come through. The result: your customers get as much light at *9,000* hours as ordinary mercury lamps give at *3,000* hours. General Electric "Bonus Line" lamps now available in *all* sizes from 100 to 1,000-watts . . . in all popular shapes and "colors" . . . *at new low prices.*

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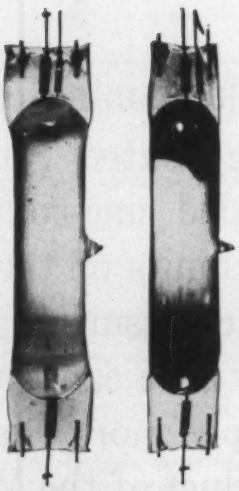

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Progress Is Our Most Important Product

GENERAL ELECTRIC

Our Changed Auto Status: What 2 Million Unit Trade Loss Means

Automaker Sales
$3.7 billion

Steel Consumption
3.5 million tons

Autoworker Manhours
374 million

Aluminum Consumption
60,000 tons

Autoworker Wages
$1 billion

Gray Iron Castings
450,000 tons

AMERICANS will buy 2 million foreign cars between Jan. 1, 1960, and Dec. 31, 1964. That's more than the total for all previous years.

The impact of 2 million imports on the U. S. economy is shown above.

Imports Alert Motordom

U. S.-built compact cars are pushing back the imports, but it's clear that a substantial market for foreign autos will exist in this country for years to come. Builders abroad are busily preparing new models that will offer more conveniences, and they aren't so directly competitive costwise with the new domestic compacts.

The import blitzkrieg has made U. S. carbuilders acutely aware that they are now competing in a new world market. They're gearing their operations to regain a larger share of automotive sales in other countries, which they have been losing as our own exports declined. Some economists are already predicting 500,000 sales abroad in 1961. How well the compacts have helped in stemming imports and spurring exports can be seen from these figures on car sales (in units):

	Imports	Exports
1960*	520,000	160,000
1959	668,000	117,000
1958	431,000	126,000
1957	259,000	161,000
1956	108,000	193,000
1955	57,000	254,000

*Anticipated. Sources: Commerce Department, Automobile Manufacturers Association.

Says Byron J. Nichols, Chrysler Corp.'s automotive sales vice president: "Of all the forces that will affect our sales in the sixties, none will be more important than our increasing participation in the market abroad. Its sales volume . . . is expected to amount to 8 million vehicles annually by 1970."

Adds George Romney, president, American Motors Corp.: "Somebody has to take the lead to expand world trade. I think we should do it. Given an equal opportunity, the U. S. automobile industry can take care of itself in this market or abroad." (See Page 63 for more from Mr. Romney.)

World Market Zooms

Five years ago, the U. S. accounted for 71 per cent of the world's car

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population, 46 per cent of its trucks. Two years ago, the figure for cars was down to 66 per cent, but trucks didn't lose any ground. Here's how the import-export situation looks for commercial vehicles (in units):

	Imports	Exports
1960*	40,000	200,000
1959	22,000	195,000
1958	15,000	178,000
1957	8,000	212,000
1956	3,000	205,000
1955	1,000	193,000

*Anticipated.

Even though our vehicle registrations rose during the half decade, the rest of the world had a bigger increase. In 1958, the U. S. and Canada were outproduced in autos, trucks, and buses by the rest of the world for the first time in history. They regained the lead in 1959, but only by a narrow margin.

Detailing what's happening, Ernest R. Breech, Ford Motor Co.'s former chairman, declares: "In the period 1950 through 1957, Europe's gross national product increased 88 per cent vs. our 49 per cent. . . ."

Barriers Must Be Lifted

Now that Detroit is designing smaller, more economical cars and trucks that better fit the preferences and pocketbooks of buyers in other countries, automakers are sure they'll be able to boost export sales. Andre Laurent, secretary-general of Belgium's SAE, reports that Europe's six Common Market nations alone contain 168 million persons who will be buying at least 5.5 to 6 million cars a year.

But motordom feels some changes must be made in our trade relations with countries overseas. The 32 per cent tariff barrier in the Common Market means that U. S. producers can profit only through capital investments in those countries. Foreign plants of Big Three carbuilders already account for 20 per cent of car and 14 per cent of truck production in the six Common Market nations.

In a statement to STEEL, George Romney says: "It seems to me our government should insist on reductions in tariffs and quotas when they renegotiate reciprocal trade agreements. Foreign companies pay a U. S. tariff of 8.5 per cent of the domestic value of the product. Our auto exports (require) tariffs up to 60 per cent, or more in some cases. And the tariffs are based on the landed price, which includes all costs involved to ship the car to the foreign country."

To Expand Overseas

Until industry can persuade the U. S. to change some of its policies, our car companies will continue to export their capital to build up assembly and manufacturing plants abroad. Machine tool builders and other manufacturers who follow suit will profit from such a move. Automotive suppliers who stay behind will enjoy a temporary advantage, but, ultimately they'll lose out. Most foreign countries usually get around to insisting that parts and materials be procured and produced locally.

Europe and South America are the prime areas for subsidiary manufacturing and assembly facilities. In other countries, there's more of a tendency to set up joint investments with foreign firms, particularly for distribution and sales. Here's a rundown of autodom's overseas operations:

• **General Motors Corp.**—Sales of cars and trucks made by GM overseas reached 711,000 units last year, a 19 per cent gain over the 1958 figure. Last year, the company built 469,300 cars in Germany and England alone. GM employs 109,000 persons outside the U. S. It has assembly and manufacturing facilities in 18 countries and is investing more than $200 million to expand foreign manufacturing plants.

• **Ford Motor Co.**—"As European and other overseas automotive markets have boomed, total annual factory sales of foreignmade Ford cars, trucks, and tractors have more than doubled in the last decade," declares Henry Ford II, president and chairman. Last year's foreign subsidiary sales totaled 748,014 units. Subsidiary and exports sales amounted to $1.5 billion compared with $1.3 billion in 1958. Ford's largest manufacturing operations are in England, Germany, and Canada. It also is investing in manufacturing facilities in Brazil, Argentina, Venezuela, and Australia. It has sales and assembly subsidiaries in Egypt.

• **Chrysler Corp.**—Chrysler International S. A., Geneva, Switzerland, co-ordinates the operations of the company's 17 wholly owned subsidiaries and its associations with five other overseas firms, including Simca. Sales in 1959 totaled 114,527 cars and trucks compared with 110,731 in 1958. (The figures include exports.) The corporation is continuing to set up facilities with foreign firms to assemble Valiants and other Chrysler cars overseas.

• **American Motors Corp.**—Export sales of Ramblers account for about 2 per cent of AMC's domestic production, but the percentage has climbed steadily while other carmakers' exports have declined. AMC's exports show a 19 per cent increase this year over last. Sales of its British-built Metropolitan are 20 per cent ahead of the 14,959 units it sold in the U. S. last year. AMC's 1959 fiscal report shows a $2.4 million investment in its revitalized Canadian automotive subsidiary.

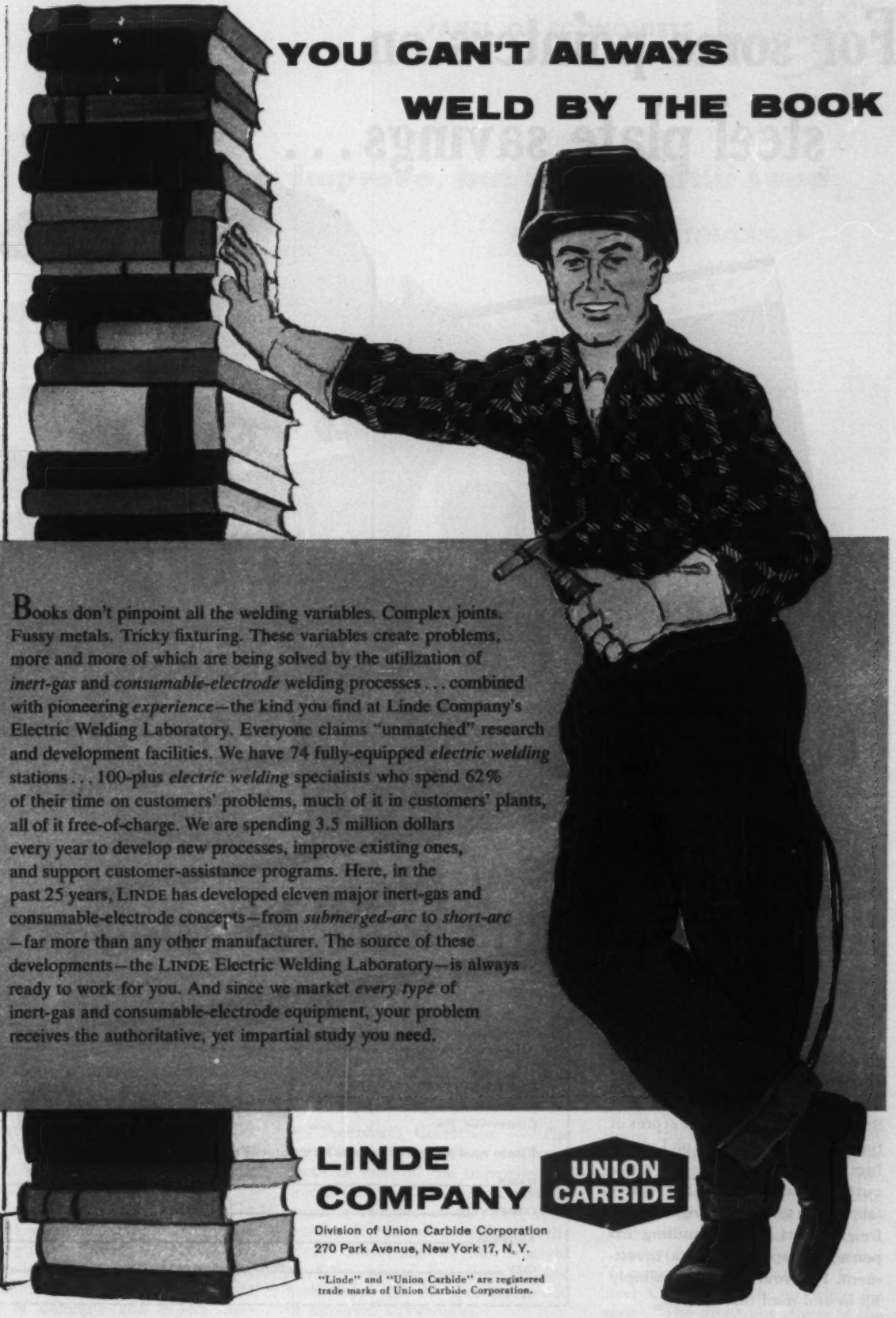
• **Studebaker-Packard Corp.** — The South Bend, Ind., automaker has wholly owned manufacturing and sales subsidiaries in Canada and Mexico, as well as licensed distribution outlets in Europe and South America. *Ward's Automotive Reports* shows that S-P's share of Canadian car output (3133 units) has fallen from 2.21 to 1.5 per cent in the first six months of this year over last. A major asset is its wholly owned sales subsidiary which imports Mercedes-Benz and Auto Union-DKW cars from Germany.

Compact Cars Fight Back

1960 Model Year Output
(Thousands of units)

Rambler	402.3
Falcon	360.8
Corvair	223.7
Valiant	168.9
Lark	119.0
Comet	71.9
Total	1,344.6

Source: *Ward's Automotive Reports.*



YOU CAN'T ALWAYS WELD BY THE BOOK

Books don't pinpoint all the welding variables. Complex joints. Fussy metals. Tricky fixturing. These variables create problems, more and more of which are being solved by the utilization of *inert-gas* and *consumable-electrode* welding processes . . . combined with pioneering *experience*—the kind you find at Linde Company's Electric Welding Laboratory. Everyone claims "unmatched" research and development facilities. We have 74 fully-equipped *electric welding* stations . . . 100-plus *electric welding* specialists who spend 62% of their time on customers' problems, much of it in customers' plants, all of it free-of-charge. We are spending 3.5 million dollars every year to develop new processes, improve existing ones, and support customer-assistance programs. Here, in the past 25 years, LINDE has developed eleven major inert-gas and consumable-electrode concepts—from *submerged-arc* to *short-arc*—far more than any other manufacturer. The source of these developments—the LINDE Electric Welding Laboratory—is always ready to work for you. And since we market *every type* of inert-gas and consumable-electrode equipment, your problem receives the authoritative, yet impartial study you need.

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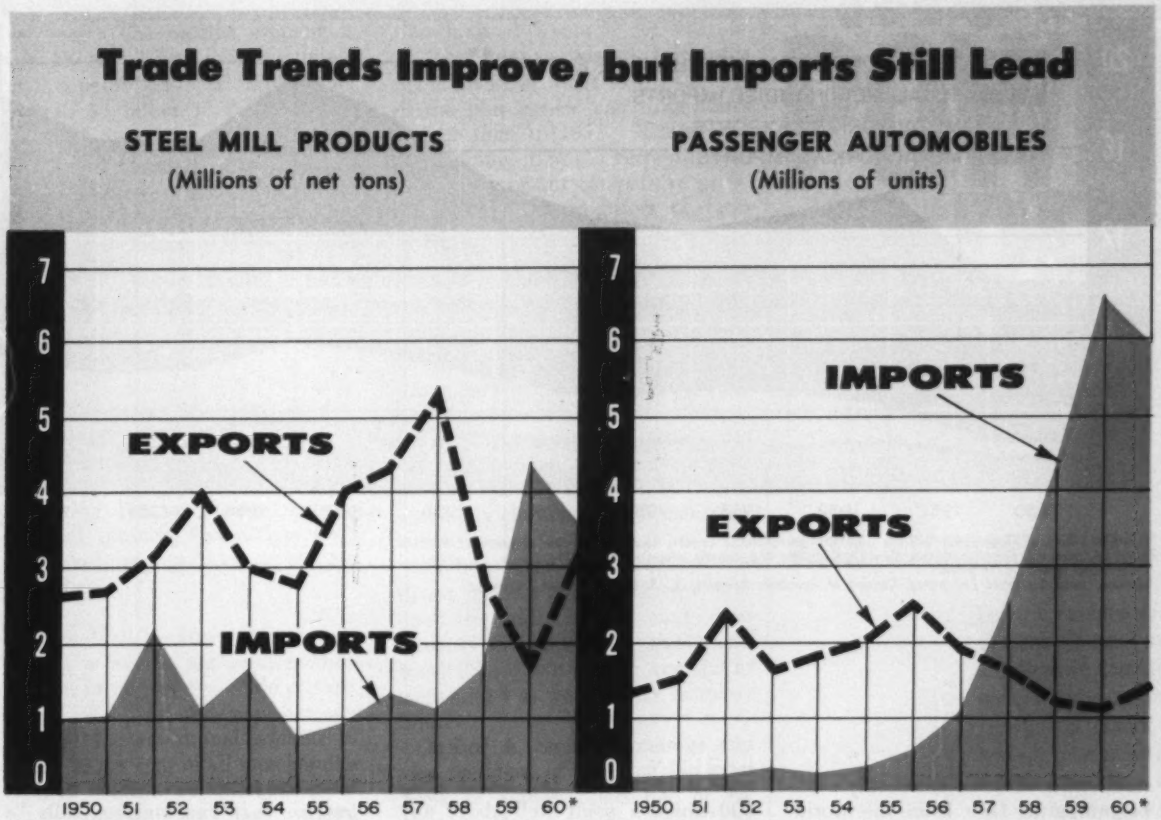


*Median estimate of STEEL's Panel of Economic Consultants.

Sources: Steel mill products—American Iron & Steel Institute, U. S. Department of Commerce; automobiles—*Ward's Automotive Reports*.

Our Dilemma: How Economists See It

"THE IMPACT of foreign competition on the economy of the U. S. is still small in relation to what is in prospect in the coming years."

So declares Stanley V. Malcuit, industrial economist for Aluminum Co. of America and a member of STEEL's 54-man Panel of Economic Consultants.

Although the economists as a whole see some easing of the foreign competitive threat in 1960, Mr. Malcuit's comment mirrors the thoughts of many who believe the loss of domestic and export markets to low cost foreign producers may become one of the most "unpleasant facts of life" as the 1960s progress.

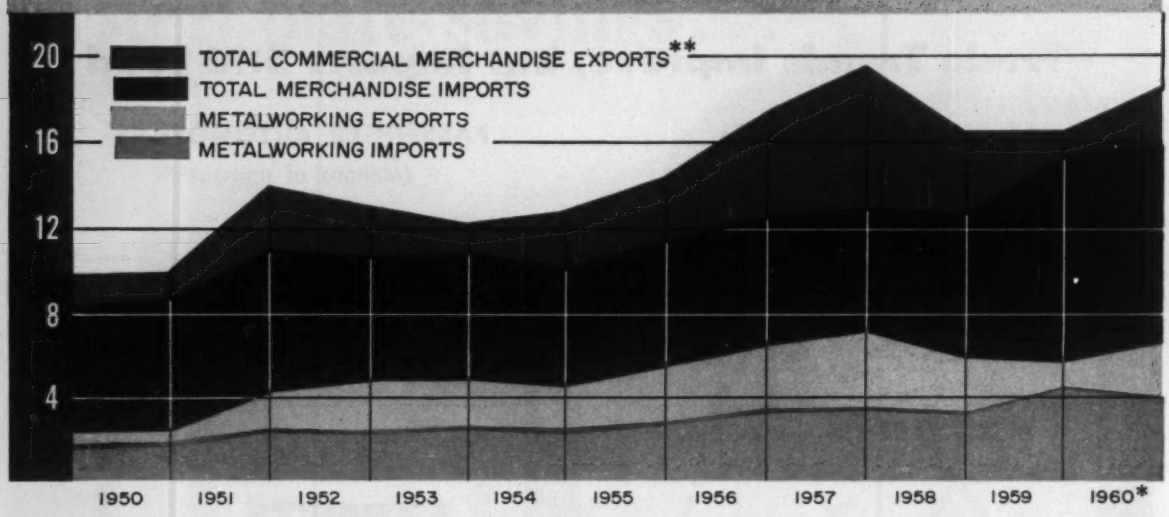
• **"Technical" Correction** — The panel's prediction of an improvement of some of the import-export trends this year does not necessarily mean a reversal of the long term trend. It can be termed a "technical" correction of the unusual situation caused last year by the steel strike and the spectacular rise of imported automobiles.

• **Steel Gap Narrows**—The trend in steel best illustrates the point. As the graph above shows, the experts look for the unfavorable gap between imports and exports to be narrowed this year, but the U. S. will remain a net importer of steel by about 1 million tons. (Only two of the respondents see the balance turning in our favor this year. Two others see a standoff.)

James L. Rich, assistant director of commercial research for U. S. Steel Corp., sums it up when he says: "The disastrous effects of the

Balance of Trade Still in Our Favor

(Billions of dollars)



*Total commercial merchandise exports and total merchandise imports represent median estimate of STEEL's Panel of Economic Consultants. Metalworking imports and exports projected by STEEL.
**Excluding grant-aid shipments.
Sources: Joint Economic Committee, Council of Economic Advisers; U. S. Department of Commerce.

steel strike of 1959 were only . . . beginning to fade from the world steel supply and demand picture . . . in the late spring of this year. For the first time in many months, exports from the U. S. exceeded steel imports."

Mr. Rich takes a longer view when he declares: "One of the major problems of business management in the future will be to see that American industry remains in a competitive position relative to other world producers. This is particularly true of the steel industry which is facing a world market for steel growing at a much more rapid rate than U. S. domestic markets."

• **Still a Lot of Imports**—The story is about the same in the automotive market. The unfavorable gap will narrow, but it will be far from satisfactory. (See graph, Page 57.) All but four of the responding members of the Panel of Economic Consultants look for a decline in auto imports this year. (See Page 53 for other views.) But no one expects imports to fall below 450,000 units, a point well above any year prior to 1959. At the same time, the panel sees exports advancing to what one member calls "a more normal year, similar to the performance in 1956-57 but not as good as in 1955."

The cause for the improvement in the auto field is simple: U. S. compacts. Economists at Inland Steel Co. feel that the compact will boost export totals for a while because it is something unique in the European market. "It is not competing directly with many foreign cars in that market. It's just a little above them, yet not too big and cumbersome. However, we think the biggest impact of the compacts on the export-import picture is that they have stemmed the tide of rising imports."

• **Net Exporter**—With relative improvement in both autos and steel, it is not surprising that the panelists see improvement in the overall foreign trade picture. (See graph, above.) The greater than usual upturn in imports last year left the U. S. a net exporter of merchandise by only $1.1 billion,

GNP Export Segment* Regains Positive Edge

1960†	+$1.4 billion
1959	−$0.8 billion
1958	+$1.2 billion
1957	+$4.9 billion
1956	+$2.9 billion
1955	+$1.1 billion
1954	+$1.0 billion
1953	−$0.4 billion
1952	+$1.3 billion
1951	+$2.4 billion
1950	+$0.6 billion

*Balance of net exports over net imports of all goods and services as measured in gross national product.
†Represents median estimate of STEEL's Panel of Economic Consultants.
Source: Joint Economic Committee, Council of Economic Advisers.

the smallest margin since 1950. In the over-all picture (goods and services), measured as a component of gross national product, they unanimously see the U. S. returning to the plus side of the ledger after recording a deficit of $800 million last year. The median estimate is $1.4 billion. (The lowest estimate on this point was $500 million; the highest, $3 billion.)

As Mr. Rich points out: "Total exports of goods have run well ahead of last year's and have contributed substantially to narrowing the deficit in our balance of payments. These developments show that U. S. industry still has opportunities available to it in world trade and is capable of taking advantage of it."

However, another steel economist, while recognizing the need for selling our products both here and abroad, declares: "In recent years, our salesmanship at home has been improving, but my impression from personal contacts abroad has been that we have not been trying too hard there."

• **Some Will Be Hurt**—Metalworking, as a whole, has been holding its own in our foreign trade picture. Since 1950, the industry has accounted for an annual average of about 36 per cent of all merchandise exports. Close to one-quarter of yearly imports are metalworking products. Many economists feel the relationships will continue. But in the process, many dislocations will take place.

Take the optical industry. William Dudley James, panel member from the Ophthalmic Div. of Bausch & Lomb Inc., says foreign competition has killed the domestic binocular industry. "All U. S. manufacturers, except Bausch & Lomb, have been forced out of the binocular business. In 1959, Japan sent 705,000 units (over $25 in value or over 5 power) into the U. S. Domestic manufacture now represents less than 1 per cent of the binoculars sold in this country." He adds that Japanese imports of microscopes increased 75 per cent between 1956 and 1959. The increases in spectacle lenses and sun glasses are even more spectacular.

Lester S. Kellogg, director of economic research for Deere & Co., feels that 1960 "will be another year of substantial imports of farm wheel tractors, mainly from Great Britain, although some tractors are now coming from Germany, France, and Italy."

But last year importation of about 15,000 tractors, or 7 to 10 per cent of total U. S. production, set an all-time high.

"This total for foreign tractors is about twice as great as the imports of the year earlier and three times greater than in 1957. If this were to continue, it would certainly pose a most important competitive problem for U. S. producers of farm wheel tractors."

• **Labor Could Help**—Benjamin F. Stacey, vice president of the First National Bank of Boston, sums up the feeling of many panel members. "In giftwares, many consumer specialties, chemicals, specialized metal products and machinery, textiles, and clothing, to mention a few, imports of high quality seem likely to increasingly challenge U. S. manufacturers.

"When labor will recognize this threat by working to increase productivity and decrease unit costs remains in doubt, but this seems inevitable if we are to remain as competitive as we now are in many lines."

Arthur A. Smith, economist and vice president of the First National Bank in Dallas, offers one of the most sobering comments of all. "The import situation is a critical one for sure, and the Russians must be taking great delight in what they see happening to us."

Panel of Economic Consultants

STEEL's Panel of Economic Consultants is composed of 54 of the nation's top economists, market, and commercial research men who represent a broad cross section of industry, banking, and commerce. They periodically report their views on the nation's economy to STEEL. Their first report was presented in STEEL, Apr. 4, pp. 91-93. Look for their next report in the Oct. 3 issue.

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YOUGH SERVICE CONDITIONS. Anode flexes installed on the potline are subject to very high temperatures. These are the same construction as the cathode straps, shown at left below, except that the flexible portion is longer.

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FIGHT FOR SURVIVAL

Our Dilemma: How Presidents See It

WILLARD F. ROCKWELL JR.
President, Rockwell Mfg. Co.

TOP MANAGEMENT is concerned about the threat of foreign competition.

That was proved by the more than 200 executives contacted during the preparation of this issue. It is substantiated by the 12 who comment here. Only a year ago, a STEEL survey showed far fewer executives were worried about our ability to compete with foreign manufacturers.

This time too, many managers are better informed on manufacturing and marketing problems abroad, are more familiar with laws, practices, and traditions of foreign countries.

• **Self-Help** — Most industrialists are critical of our competitive performance here and abroad; they point to a list of improvements that companies ought to make for themselves. They feel, for example, that we must learn to design for foreign markets, must learn more about marketing abroad, and must better utilize our geographical advantages for the competitive race in the U. S. Many also point to the trend to establish manufacturing agreements abroad to take advantage of lower labor costs.

There is less emphasis on what the government ought to do. Few favor protective tariffs to guard their U. S. markets. Only one of the dozen quoted here favors them, and he wants them only as temporary measures. For the long run, he challenges his industry to maintain a new product pace that will keep it in front competitively.

One step frequently mentioned: Government could provide more help in establishing credit and financing for sales abroad. Another: Government should negotiate with other countries on some of the penalties they impose on U. S. goods they import.

The lack of unanimity on what government ought to do undoubtedly will make it more difficult to get any positive action from Washington.

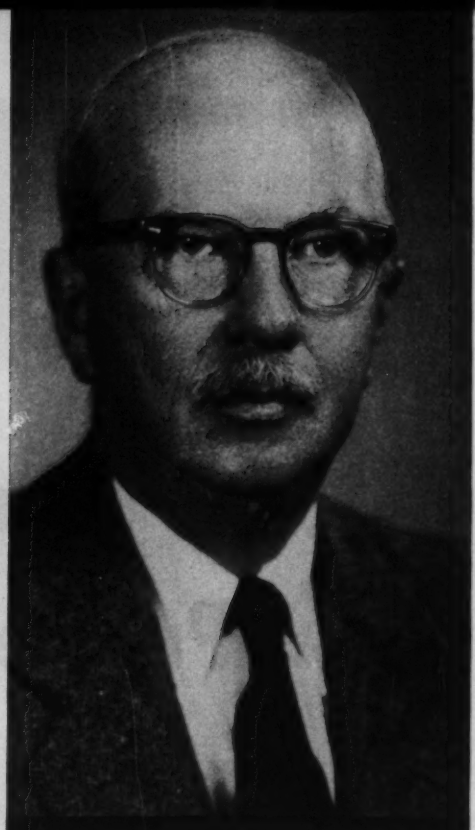
One area of general agreement: Foreign competition is a real challenge that won't be solved by a laissez faire policy on the part of either industry or government.

Willard F. Rockwell Jr.:

Foreign competition outside the U. S. is a serious problem to us, and sooner or later, it will become a problem in domestic markets. If we hadn't acquired a German subsidiary in 1957 and set up an international sales office in Geneva, we would have been forced out of the South American market. Because of our high labor costs in U. S. plants, we couldn't meet competition from foreign firms that were quoting prices as much as 40 per cent below ours.

The government could help by changing its financial policy on export sales. The Export-Import Bank won't give credit insurance on sales to industries controlled by foreign governments. As a result, we must take orders involving heavy credits at our German plants. Hermes, the German government's insurance agency, will guarantee payment of 80 per cent of the credit we extend. The U. S. might also encourage export sales by pro-

FRANK L. MAGEE
President, Aluminum Co. of America



McCLURE KELLEY
President, Baldwin-Lima-Hamilton Corp.

"...utilize every ingenious development to compete with imports"

viding tax incentives. The Germans have a rebate policy: A percentage of the sale is returned to the exporter because he extended himself.

Industry can help itself by: 1. Designing products for the foreign market. 2. Adopting international standards. 3. Applying the same sales administration policies and close supervision to foreign operations and sales that it uses at home.

Frank L. Magee:

We're much concerned with foreign competition, particularly in mill products. The higher the labor content of a product, the harder it is to compete with it.

U. S. industry has to utilize every ingenious development to compete with imports. Further, if U. S. industry expects to participate in foreign markets, we'll have to get into the fight over there—exporting our goods where we can and joining with local industry where we can't.

Investments being made abroad are aimed at the U. S. market. The U. S. is the world's biggest aluminum consumer by far. Last year, per capita consumption in this country was 27 lb (vs. 7 lb in Europe and the United Kingdom, 5 lb in Russia, and 0.3 lb in the less developed countries). If we can get the Belgians and Germans to use more aluminum at home, maybe they'll stop shipping so much over here.

Aluminum fabricators in Belgium, Germany, Italy, and Yugoslavia are selling 2011 alloy screw machine stock to U. S. customers at 45 cents a pound—12 cents below the U. S. price. Foreign suppliers are taking about 10 per cent of the U. S. market for this product.

I think almost all businessmen believe in free trade. We merely want to have an equal chance. Our biggest problem is to export over tariff walls that are higher than ours. We wouldn't be too popular if we favored higher tariffs, but we're fighting against any reduction.

We would be in favor of quotas as an antidumping measure. Canada uses quotas against us. Russia is building an aluminum industry with an annual capacity of 600,000 to 700,000 tons. Some day, when they've taken care of their military requirements, they may start dumping. I hope the government won't sit idly by and let that happen.

At Alcoa, we're trying to get into foreign markets by entering into partnerships with overseas producers. We're not going into England, Japan, or Venezuela with any purpose other than to share in the growth of those markets. We're going to introduce our merchandising methods and see if we can boost per capita consumption.

GEORGE ROMNEY
President, American Motors Corp.

"Given an equal opportunity, the U. S. automobile industry can take care of itself . . . I don't favor increased tariffs or import quotas"

McClure Kelley:

The increasing strength of foreign competitors has weakened our company's position in both machine tools and turbines. Although such competition is not so severe in our construction equipment field, we feel it, too, might become a problem.

We are not in favor of higher tariffs or import quotas. They would only tend to protect the highly fictitious labor value we live with. We do, however, feel that government must recognize and face the problem of keeping U. S. makers of heavy equipment in business, and it must realize that, in the present climate, we simply can't get business in some of our equipment lines.

At least two measures ought to be evaluated: First, we could strengthen our "Buy American" plan. If the price factor on government buying were raised from a meaningless 6 per cent to 25 per cent, for example, the program might have some significance. Also, the government could well strengthen its program for helping us finance some of our sales. We're now getting only token aid.

There is no easy answer that will help us sell more capital equipment abroad. Certainly, we can manufacture more of our products abroad to ease our high cost and high price problems. If the problem of competing in a world market continues to grow, many of us heavy industrial equipment makers could become engineering, sales, and service organizations in this country, with most or even all our manufacturing facilities abroad. But we think such a move is highly undesirable, particularly when it's considered in the light of our country's need for our facilities in a national emergency.

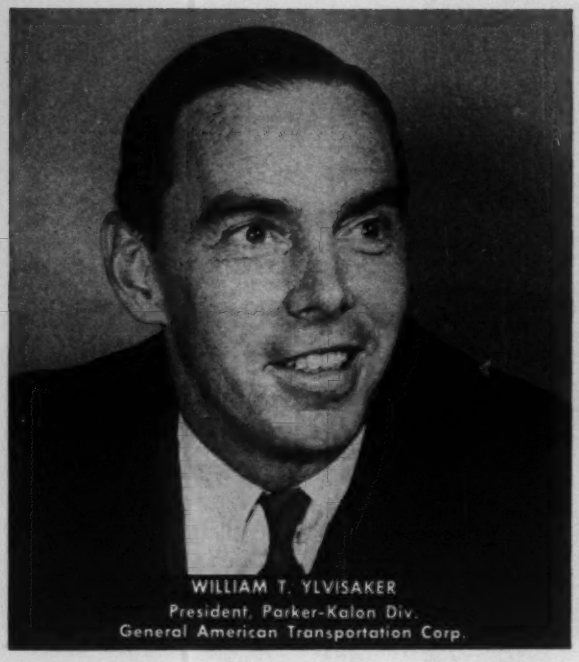
Frankly, we do not know how to improve our competitive ability in the U. S. segment of the world market. Cost and price differences place us at a tremendous disadvantage. Also, it is not enough to propose that we outdesign and outproduce our foreign competitors. Much foreign technology, notably that in some parts of Europe, is every bit as good as ours—and many of their manufacturing plants are superior to those in this country.

George Romney:

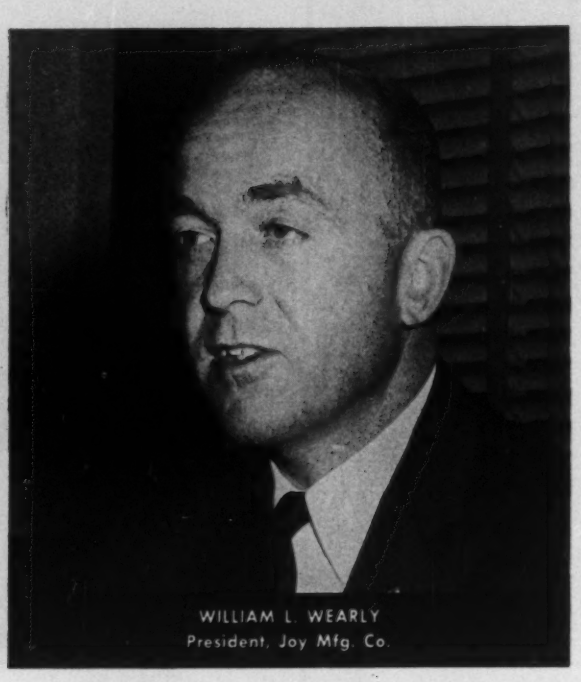
We are in two industries, appliances and autos. As far as appliances are concerned, foreign competition is a problem in foreign markets but not in the U. S. where we know our markets and consumers better.

I'm not concerned about automotive imports although other firms have been. As far as I'm concerned, the small cars simply help sell our Ramblers. And our exports of cars have been rising steadily.

Given an equal opportunity, the U. S. automobile industry can take care of itself in the U. S. market or abroad, so I don't favor increased tariffs or import quotas. I do believe, however, that our government should do a great deal more to reduce the discrimination against



WILLIAM T. YLVISAKER
President, Parker-Kalon Div.
General American Transportation Corp.



WILLIAM L. WEARLY
President, Joy Mfg. Co.

U. S. products sold overseas. Foreign companies pay a U. S. tariff of 8.5 per cent of the domestic value of the product. Tariffs on our auto exports are up to 60 per cent, or more in some cases. They are based on the landed price, which includes all costs involved in taking the product to the foreign country. It seems to me that our government should insist on reductions in these tariffs and quotas when they renegotiate reciprocal trade agreements.

Insurance is another area in which the government can help. Present insurance on financing foreign customers is not comparable to that offered by European governments. I would like to see consumer credit and financing put on a comparable basis through the joint support of the U. S. government and private banks.

As far as maintaining our sales balance overseas, we should design products suitable for foreign markets. We should merchandise aggressively. We should assemble and manufacture abroad wherever feasible, and we should try to do it in partnership with foreign companies.

In competing with exports, we must develop sensible products and bring costs down. The way to correct an adverse import situation is to correct the problems in our country that are causing the handicap. Artificial restrictions for nationalistic purposes simply postpone more serious troubles.

William T. Ylvisaker:

In the last five years, fastener imports have jumped 10 to 20 times, depending on the product. The cause is the higher wages paid here. Imports now undersell U. S.-made fasteners by 10 to 40 per cent. The differential varies with the labor content of the product. The result: Profit margins are down.

As a temporary solution to imports, I would like to see higher tariffs. They are needed to maintain a healthy fastener industry. As a permanent solution, I believe that our industry (or any industry) must come up with new products and processes and keep ahead of foreign competition in manufacturing techniques and product superiority.

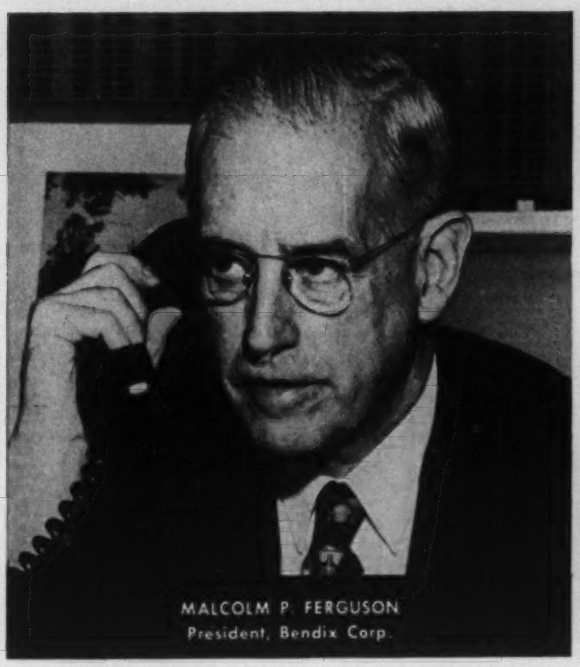
We hope to develop a larger percentage of our sales in proprietary products (three items developed in the last year now account for 7 per cent of sales). We also hope to improve methods of manufacturing to lower total costs of production (equipment has already been developed that can produce items two to six times faster than machines made prior to 1950).

To achieve those goals, two things will have to be done: 1. Depreciation laws must be revamped to give U. S. industry the opportunity to replace capital equipment more rapidly. 2. Labor increases must be held down to better equalize wages paid overseas and those paid here.

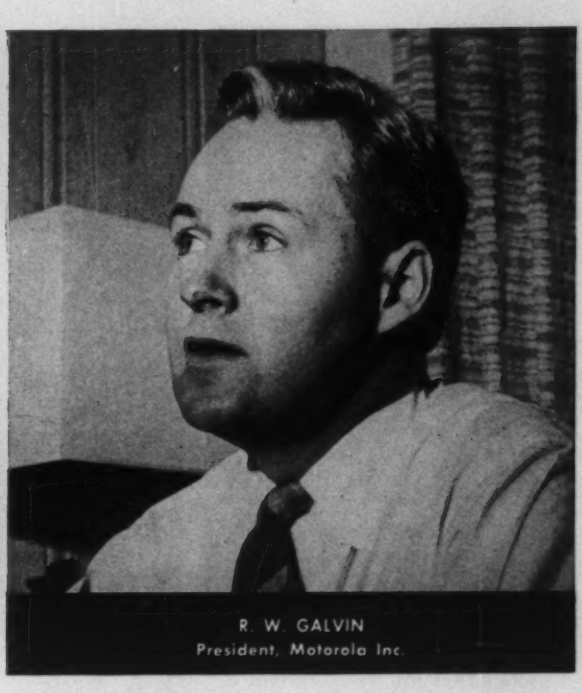
William L. Wearly:

In selling abroad, we have been adversely affected by foreign competition. We began to lose our export markets in 1949 because of world-wide devaluation of currencies. For example, we used to export a machine to South Africa that cost the purchaser $100,000—or £25,000 when the pound was pegged at $4. When it was devaluated to $2.80, the purchaser had to give us £35,700—so our price was almost 50 per cent higher.

To retain and expand our foreign markets, we have established manufacturing subsidiaries in Great Britain, France, South Africa, and Australia. By manufacturing for export in Great Britain, we have



MALCOLM P. FERGUSON
President, Bendix Corp.



R. W. GALVIN
President, Motorola Inc.

regained some important markets that had been lost to our parent company for five to seven years. The results have been good for our stockholders but not for the U. S. economy. In 1958, we had 6100 employees in the U. S. and 800 abroad. Today, we have 4800 here and 2000 abroad.

To help ourselves, we're setting up a special engineering organization in Europe that will design products to meet foreign specifications. The government could help us by: 1. Sponsoring a credit insurance program of the type that the British, French, and German governments have established. 2. Making our people realize that foreign competitors have excellent factories and can capture our markets if our labor costs get out of hand.

Malcolm P. Ferguson:

Import competition has scored a direct hit on our company in only one small area—our bicycle coaster brake business. We used to share the $4½ million to $6 million U. S. market with one or two domestic firms. Now, low priced imports have cut the total U. S. share to less than 10 per cent in just three years.

I do not broadly favor higher tariffs to combat competition. But I do think that we will need reciprocal U. S. import quotas as our own exports may be affected by them. We don't want to make any such quotas a political football, but I do feel our government has a responsibility to assist U. S. business with the rest of the world wherever it can. I also think that in the future it may be feasible for the government to assist in setting up credit arrangements — perhaps a credit fund—that eligible businesses can use in export trade.

To further improve our competitive position, Bendix is placing heavy emphasis on technological advances in products and in manufacturing. Almost $100 million of our $700 million annual sales volume goes into research and development expenditures, including those of a defense nature.

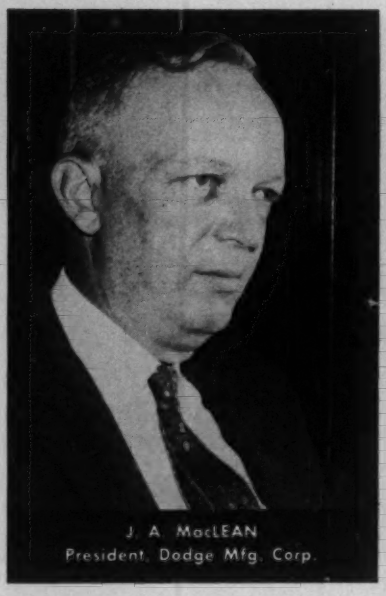
Finally, I think it's important to create a better understanding among all our employees as to what competing in the world market means. We have to make sure that the man on the production line and the engineer in the laboratory know everybody's job will be jeopardized if we don't learn how to compete successfully. This may well be management's most important sales campaign in the next decade.

R. W. Galvin:

Competition from foreign manufacturers has been and will continue to be a challenge to U. S. electronic equipment makers. But to Motorola, it poses no greater threat to economic growth than competition of domestic producers.

For example, the Japanese developed and first marketed the pocket size radios. Their introduction into this country disturbed our whole radio manufacturing and marketing picture. But it has been to our benefit, rather than to our detriment. We had to scramble to meet the competition, but sales of pocket size radios now surpass those of all other types.

We think that U. S. industry can compete against imports through our traditional methods of research, development, and marketing. There have been occasional setbacks, but U. S. industry has proved in the last 50 years that it can beat any competition from any part of the world. It means looking to our own capabilities and not to Washington. It also means a willingness to accept the fact that many foreign



J. A. MacLEAN
President, Dodge Mfg. Corp.

AUSTIN ZENDER
President, Bridgeport Brass Co.

WALTER S. JOHNSON
President, Friden Inc.

manufacturers are as competent as we are in certain areas and that it may often be desirable to buy certain parts from those manufacturers. We import about 3 per cent of our total purchases. Some of the imported parts are not yet available in this country.

We do not advocate higher tariffs as a method of unduly restricting competition from abroad . . . to . . . dry up this country as an outlet for foreign goods. Foreign trade arrangements and tariffs should be equitable for all countries in the Free World.

U. S. industry can help itself maintain a good level of sales in the world markets by: 1. Increasing the export of our products. 2. Stepping up overseas licensing and manufacturing arrangements.

To export successfully, we must design for the wants and needs of foreign customers. We must also learn the marketing techniques of foreign countries and apply the U. S. methods that we know will work.

Perhaps the most effective way to increase foreign sales will be through licensing and manufacturing abroad. We gain two advantages by making our product in the foreign country where it will be marketed: We can compete costwise with foreign manufacturers, and we can compete in terms of distribution and service.

J. A. MacLean:

Until now, foreign competition has had little influence on our world business. However, changing trends in world import and export business and changing economic factors in world competition, indicate a turn for the worse in the future.

We favor relatively free world trade. The government should assist via such means as the General Agreement on Tariffs & Trade to establish favorable climates for trade, and it should assist in providing guarantees for the free convertibility of money and the free movement of people and goods. We do not believe that the government should erect tariff barriers and quota systems, but it can help business by doing something about foreign hindrances to U. S. exports.

Increased sales abroad depend upon providing effective competition with foreignmade goods, which in many instances will require establishment of foreign licensees, affiliates, and subsidiaries. We have established licensees in the United Kingdom, partially owned subsidiaries in Australia, and a wholly owned subsidiary in Switzerland—it, in turn, has substantial investments in France and in Mexico. Those activities are in addition to our export business.

Effective competition against foreign products in this country requires practically the same approach we use in dealing with domestic competitors.

Primarily, it involves quality products and superior service at competitive prices.

Austin Zender:

Although our industry has been hit hard by low priced imports (199 million lb, or 10 per cent of the market, in 1959), we don't believe the U. S. should institute prohibitive tariffs to keep out imports. We should impose the same tariffs that other nations impose on us.

The brass mills don't want an unfair advantage, but we do believe present tariffs are unrealistic. We are asking the Tariff Commission for an ad valorem duty on brass mill imports that would eliminate the present straight cents per pound tax and substitute a percentage system.

Under the present arrangement, the only thing a U. S. brass mill can do to meet foreign competition is to lower prices to the level of the imports.

You can't do that for long and make a profit.

I'm not worried about foreign competition taking part of the business here. You have to have world trade. The big problem is . . . import prices are so much lower than those we can quote that the whole

"Encourage industry to invest in modern tools by overhauling the depreciation allowed for tax purposes"

LESLIE B. WORTHINGTON
President, U. S. Steel Corp.

domestic price structure is weakened. If the disparity is allowed to continue, our standard of living will be pulled down.

Brass mills have a limited export market—it's confined to alloys that aren't manufactured in Europe. To better compete there, Bridgeport will have to go overseas and build plants or buy into companies.

But what our company makes overseas, it will sell overseas. I certainly am not in favor of U. S. companies producing overseas and shipping back to this country. That isn't the answer to our problem.

Walter S. Johnson:

Competition from foreign office appliances, such as typewriters, adding machines, and calculators, is becoming a real problem to our industry.

If our government would put the same import duty on incoming office appliances as some governments do on our exports, it would be helpful. We do not believe that import quotas are the answer, and we do not think our government should attempt to subsidize U. S. companies in the industry. But foreign countries have strengthened their office appliance industries with money we have given them, and they have been able to increase exports to the U. S. which are competitive with our products. It hardly seems fair, particularly when the wages in such countries are about one-fourth what we pay here.

U. S. office appliance companies will have to manufacture abroad and take advantage of lower wages and nearness to the European markets. We are doing exactly that with our factory in Holland.

We believe the proper solution to the import problem is for us to continue to make better quality products and through research develop new and more important items.

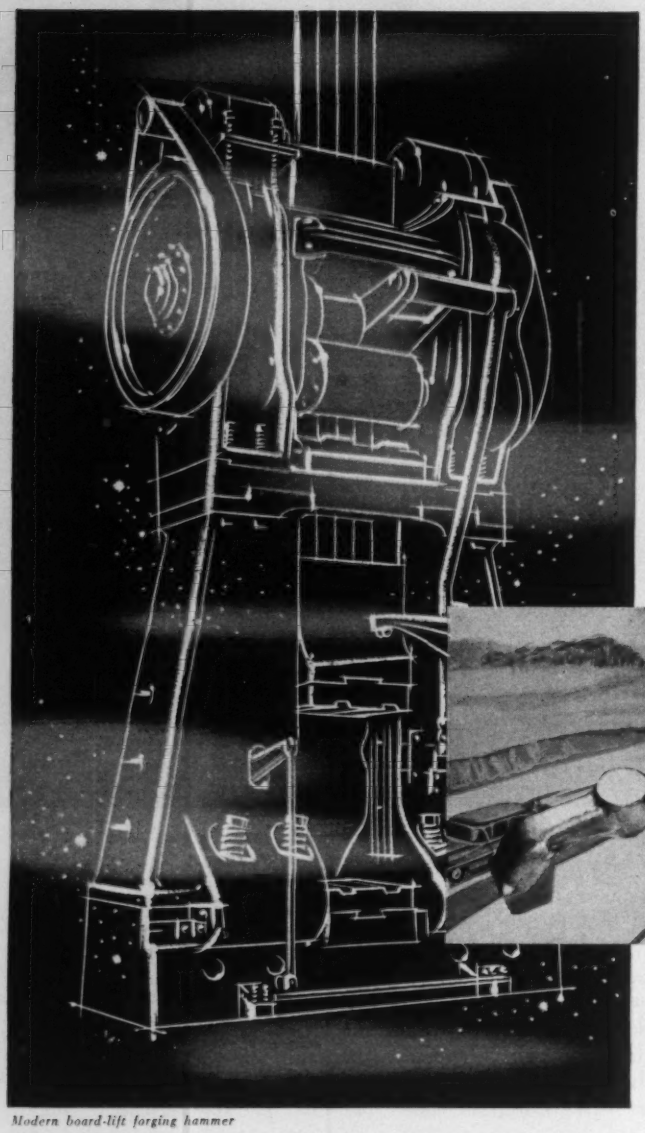
Leslie B. Worthington:

In December, 1958, the U. S. became a net importer of steel products and for every month over a 17 month period, imports exceeded exports. Foreign competitors with modern facilities, improved production practices, and much lower labor rates are a serious threat to the U. S. steel industry.

We feel tariff barriers and import quotas are not the answer. Our government can help by: 1. Dissuading other governments from interfering unreasonably with the free functioning of economic competition. 2. Taking a vigorous stand against the adoption or renewal of discriminatory import practices against U. S. goods in foreign countries. 3. Encouraging industry to invest in modern tools by overhauling the depreciation allowed for tax purposes.

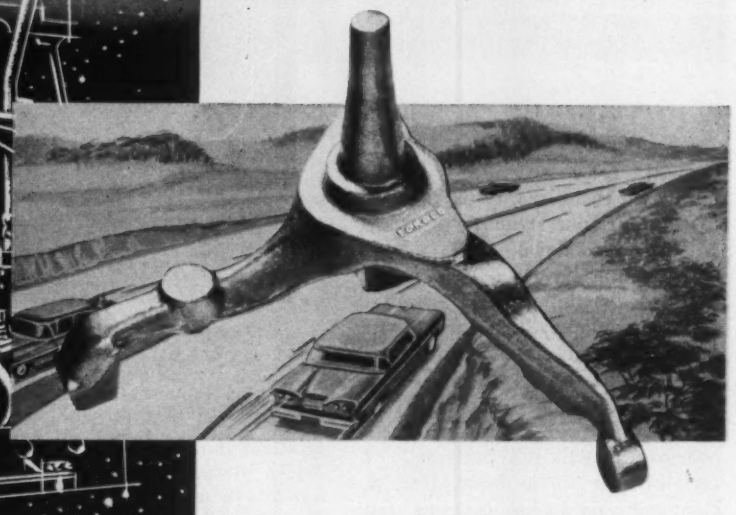
No other nation produces steel of better quality, greater variety, or stricter adherence to the customer specifications than we do. We can maintain our position in world markets by improving the steels we make at a more rapid rate than our foreign competitors and by reducing our costs faster than they do.

Service, quality, and availability are our triple lines of attack against foreign competition at home. Those weapons, plus a constant effort to reduce our costs, will safeguard our competitive position as no other public or private measures can.



Modern board-lift forging hammer

SHOCK-STRENGTH of steering spindle soars by designing it to be forged



By designing front-end spindles to be forged, automobile and truck manufacturers practically eliminate danger of failure of these vital parts, even under sudden turning stress that can reach thousands of foot-pounds.

Start your designs by planning to use forgings everywhere there's a high degree of stress, vibration, shock, or wear. Forged parts withstand them all better than parts made by other fabrication methods. And forgings have no hidden voids to be uncovered after costly machining hours have been invested . . . the hammer blows or high pressures of the forging process compact the *better* forging metal, make it *even better.*

Write for literature on the design, specification, and procurement of forgings.

When it's a vital part, design it to be FORGED

Drop Forging Association • Cleveland 13, Ohio

Names of sponsoring companies on request to this magazine.

Our Strategy For Survival

SINCE 1956, we've lost more than $4 billion in sales, the livelihood of some 2 million people, millions of tax dollars, and inestimable prestige in the world market.

While we've been losing (see Page 39), our foreign competitors have been building up their industrial muscles for an even more intensive attack (see Page 47).

The stakes are high. Never before has a single nation bet as much on foreign markets as we have. U. S. exports, plus goods produced abroad through licensing arrangements, plus the production of U. S. branch plants total well over $50 billion—a formidable figure compared with a gross national product of $500 billion. The Labor Department estimates that the jobs of 4.5 million workers depend on foreign trade.

Also in jeopardy is the giant domestic market—more of which is being lost daily to our rivals abroad.

But our potential is terrific. We face an era of unprecedented growth—in the U. S. and throughout the world. In the next ten years, the Free World's population will jump 20 per cent, and its national output will soar more than 50 per cent.

U. S. companies that adopt an aggressive program of international development—to safeguard home markets and expand foreign markets—will share in that phenomenal growth. The alternative: Industrial paralysis.

Plan of Attack

How can you insure survival? Ralph E. Smiley, president, Booz, Allen & Hamilton International Inc., suggests four steps:

1. Plan on a world-wide basis.
2. Analyze your industry and markets.
3. Audit your resources.
4. Determine how you can improve your competitive position in the world. Then follow through.

Adopt World Concept

To be successful in international marketing, you must adopt a world enterprise concept, the experts agree (see box on Page 72). It means looking at the African market like you would look at, say, the Western U. S. market. It means looking at world potential in all your planning. Many successful world marketers already do this. Examples: Gillette, Singer, IBM, Ford.

Even if you don't intend to sell in foreign markets, you should adopt the global concept. You can share in world market growth by supplying international traders. Or you can safeguard your domestic markets by keeping a close watch on your competitors' world-wide efforts.

No U. S. industry is safe from foreign competition. So it's wise to take a page from the military strategist's handbook: You can't win a war by building walls; you win via counterattack.

Gage Your Potential

How to counterattack?

First, gage the potential. Examine the sales possibilities in the 30 top

FIGHT FOR SURVIVAL

The Top 30 Foreign Markets

COUNTRY	Market Rank	Population (Millions)
United Kingdom	1	51.7
West Germany	2	52.2
Japan	3	91.8
France	4	44.5
Canada	5	17.0
Italy	6	48.6
Brazil	7	62.7
Australia	8	9.6
India	9	392.4
Netherlands	10	11.2
Belgium	11	9.0
Sweden	12	7.4
Argentina	13	20.3
Spain	14	29.7
Mexico	15	32.3
Union of South Africa	16	14.4
Switzerland	17	5.2
Austria	18	7.0
Denmark	19	4.5
Norway	20	3.5
Indonesia	21	86.9
Finland	22	4.4
Colombia	23	13.5
Turkey	24	25.5
Venezuela	25	6.3
New Zealand	26	2.3
Cuba	27	6.5
Egypt	28	24.0
Chile	29	7.1
Philippines	30	22.7

foreign markets (above).

Or look at the European Common Market and the Outer Seven. Combined, they contain 257 million people (vs. 179 million in the U. S.). In 1959, per capita output was $990 in the Outer Seven, $920 in the Common Market (vs. $2720 in the U. S.). The two areas have the capacity to produce 6 million autos annually; per capita ownership is one-fifth that of the U. S. Roughly the same market saturation applies to many other products—such as TV sets, radios, telephones.

Or look at the Latin American market. By 1970, population will jump 30 per cent to about 60 million, a McCann-Erickson study shows. National output will exceed $100 billion in 1970 vs. about $70 billion today.

Or examine sales potential in South Africa. S. J. Rundt, consultant on international business, points out that this country, with an area slightly larger than Texas, Oklahoma, and New Mexico combined, contains about 15 million persons. A sovereign nation and member of

Minnesota Mining & Mfg. Co., with 14 plants abroad, has been selling its products throughout the Free World for 30 years. The firm's foreign revenues grew from $7 million in 1950 to more than $95 million last year. Since 1953, volume in ten foreign subsidiaries has grown 500 per cent. The company's International Div. is a leading exponent of foreign market research. This table shows how 3M ranks over-all market potential of the 30 top foreign countries. Omitted here, but always considered by 3M, are: 1. Urban population. 2. Student enrollment. 3. Percentage of exports to national income. This is the 1959 report of an annual study made by the firm

National Income (Billions of U. S. dollars)	Exports (Billions of U. S. dollars)	Steel Consumption (Millions of tons)	KW-HR Produced (Billions)	Motor Vehicles Operating (Millions)	Paper Consumption (Millions of tons)	Telephones In Use (Millions)	Radios In Use (Millions)	Newspaper Circulation (Millions)
48.9	9.3	21.0	105.5	5.90	4.11	7.4	16.2	29.1
38.1	8.6	23.2	91.8	3.98	2.83	4.7	15.2	14.7
22.9	2.9	13.9	81.3	1.35	2.08	3.9	15.9	36.4
37.3	5.1	15.0	57.4	5.06	1.81	3.5	11.3	10.7
24.8	5.1	7.4	90.2	4.67	2.13	4.8	5.3	3.9
19.6	2.5	7.4	42.7	1.80	0.85	2.9	7.5	5.0
9.7	1.4	2.1	15.5	0.81	0.57	0.9	6.0	3.0
10.3	2.2	3.4	18.3	2.55	0.64	1.4	2.2	3.7
23.8	1.5	4.0	12.0	0.56	0.32	0.3	1.7	2.5
7.6	3.1	3.2	13.4	0.57	0.70	1.3	2.5	2.9
8.2	3.2	3.2	12.6	0.87	0.46	1.0	2.3	3.3
9.3	2.1	3.4	29.0	1.10	0.70	2.4	2.7	3.4
4.6	1.0	1.5	6.9	0.58	0.32	1.2	5.5	3.2
9.3	0.5	1.8	14.5	0.32	0.21	1.3	5.5	2.0
7.4	0.6	1.5	8.5	0.69	0.29	0.4	3.5	1.3
4.7	1.3	2.4	18.9	0.99	0.27	0.8	0.9	0.7
6.4	1.6	1.5	15.9	0.45	0.35	1.4	1.0	1.5
3.8	1.0	1.5	12.5	0.36	0.23	0.6	1.9	1.3
3.9	1.2	1.0	3.6	0.44	0.33	1.0	1.8	1.7
3.3	0.8	1.0	25.8	0.28	0.31	0.6	1.3	1.3
8.1	1.0	0.3	1.0	0.16	0.09	0.09	0.8	0.6
2.8	0.8	1.0	7.7	0.21	0.19	0.5	1.3	1.8
2.0	0.5	0.3	2.6	0.16	0.09	0.2	1.8	0.8
9.8	0.3	0.3	2.1	0.08	0.08	0.2	1.1	0.7
4.9	2.4	1.8	1.9	0.31	0.07	0.1	0.6	0.6
2.6	0.8	0.4	5.6	0.70	0.12	0.6	0.5	0.9
2.3	0.8	0.3	1.5	0.21	0.13	0.2	1.3	0.8
2.6	0.5	0.2	1.7	0.10	0.09	0.2	0.9	0.5
2.3	0.5	0.6	4.3	0.12	0.11	0.2	0.9	0.5
4.4	0.4	0.4	1.4	0.15	0.07	0.07	0.5	0.4

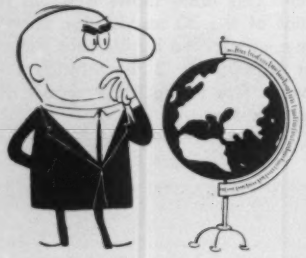
the British Commonwealth, it offers great potential for U. S. exporters. Perkin-Elmer Corp., Norwalk, Conn., maker of scientific instruments, says Africa and South America offer the greatest market potential in the next ten years.

Those are only examples. You can find market opportunities in the more than ten dozen sovereign nations and the hundreds of distinct areas within them. And Mr. Rundt points out: "Those who but a short while ago neglected the lesser sales territories abroad, will have to start cultivating them because several small markets are insurance against a dropoff in a big market, and many tiny markets can offset reversals in the biggest market."

For example, look at little Guatemala. U. S. exporters sold $22 million worth of goods there during the first four months of this year.

Britain must import about 22 per cent of her consumption, Holland about 38 per cent, Belgium 30 per cent, West Germany more than 10 per cent.

And don't forget to carefully re-



How to Attack The World Market

A global concept of management is the only way to get truly effective management of your program, asserts Ralph E. Smiley, president, Booz, Allen & Hamilton International Inc. He says it entails far more than developing an extension of a domestic operation. It involves planning for integrated domestic and overseas markets. It permits you to exploit the inherent advantages of each area: Investment incentives, lower labor costs, new or cheaper sources of raw material, the availability of good research and executive personnel, ever changing currency conditions, fiscal arrangements that facilitate the financing of an expanding operation. To develop a world enterprise, you must examine: 1. Corporate structure. 2. Financing. 3. Plan of organization. 4. Operating policies. 5. Management controls.

- **Corporate Structure**—Mr. Smiley gives three examples of areas to consider: 1. Establishment of a subsidiary in a profit sanctuary country. 2. Branch vs. subsidiary operation. 3. Establishment of a sales company in Switzerland handling goods made by other companies in other countries.

- **Financing**—Keep in mind such points as these: 1. Investment tax incentives. 2. Availability of local funds at better terms than dollar financing. 3. Obtaining equity participation in return for patents and knowhow. 4. Contributing redundant U. S. equipment to the foreign operation.

- **Organization**—Says Mr. Smiley: "A world enterprise—when compared with a purely domestic concern—shows a need for clearer policy coordination at top levels and for more decentralization of day-to-day decisions."

- **Operating Policies**—Sensitive areas include: 1. Executive compensation. 2. Intercountry and interdivisional pricing. 3. Geographic marketing responsibilities.

- **Management Controls**—"The demands of a world enterprise add totally new dimensions to the management controls and reporting system," says Mr. Smiley. He suggests you emphasize: 1. Development of comparable results from widely disparate business units. 2. Dealing with pertinent political and social developments. 3. Communicating desired actions quickly to far away points.

- **Why Do It?**—If an Ohio manufacturer had a good market in California but didn't consider it in the daily conduct of his business, he would be called inept. So is the manager who gives that treatment to his foreign operations. He would probably never recognize his potential abroad, and even if he did, he'd probably fail to develop it.

search the U. S. market. The firm —whether U. S. or foreign—that first anticipates—and acts upon—an emerging customer need will be the one heading for the best competitive position. Example: Volkswagen.

Audit Your Resources

Can you meet the potential? Ask yourself questions such as these: What advantages do my patents and manufacturing knowhow give me? Can I get funds to develop my potential abroad? Do I have marketing knowhow that can be applied in world markets? Are there areas in which I could learn from foreign producers? Does my staff have knowledge of how foreign operations are handled? Do I have a product or component that could be produced more cheaply abroad? How can I adapt my product for sale abroad? Can I supply other companies that sell in the important markets of the world? What can I do to upgrade my resources?

Audit Your Competition

Now you know your strengths and can capitalize on them. You should likewise capitalize on your competition's weaknesses. In the U. S., that might mean playing up your superior dealer organization (Cushman Motors, Lincoln, Nebr., believes that is its most important advantage over foreign competition), or your better service, or your technical assistance.

But you must first know your competitors' weaknesses. It's tougher to check up on foreign firms than your domestic competitors. You may have to hire a consultant. One reason: Most published reports of foreign firms are useless, says Donald L. Maggin, overseas planning director, Booz, Allen & Hamilton International Inc. He tells about a foreign automotive firm that didn't issue an annual statement from December, 1957, to October, 1959. During that time, the company went bankrupt while its stock rose 300 per cent. Another example: A U. S. farm machinery firm bought a subsidiary, then found that its assets were far below what had been represented. You can get good information from bankers, government officials, trade associations, private consultants. Herbert Burchill, vice president - Latin American Dept., Singer Mfg. Co., says a manufacturer planning to sell abroad should go there first himself and obtain the services of a first-class lawyer and a banker. He adds that the U. S. offices of international banks can give good assistance.

Pick Best Route

How to participate in world markets? You must choose from four principal methods—investment in foreign facilities, exporting, licensing, establishment of sales, engineering, or contracting branches. Or you can use a combination or modification of those. To decide, you'll probably want to set up a study group to look into the many complex factors involved. Here are some basic principles.

- **Invest**—"Ownership is the preferred approach if long term potential is good," says Mr. Smiley. It permits you to take advantage of lower labor rates and market proximity. It can also give you the

advantages of no—or lower—tariffs, perhaps lower taxes or tax incentives, easier access to third markets. For example, overseas territories of the member nations in the Common Market are linked to the group.

Investing in the Common Market and Outer Seven can open key third markets, Mr. Smiley points out. Foreign trade accounts for 20 per cent of the Outer Seven's national product and more than 15 per cent of Common Market output. Mr. Smiley says it is sound policy to endeavor to develop strongly in both markets simultaneously. While the two may eventually merge, each can support separate operations.

The payoff can be great. Take Borg-Warner Corp. Five years ago, the firm was building its first European plant. The goal: Put automatic transmissions into British cars. In 1956, the plant began assembling automatic transmissions using parts from the U. S. Since then, British suppliers have been drawn into the industry until now only one clutch part is exported from the U. S. The rest come from plants within a 200 mile radius. Output doubled in 12 months, is running above 30,000 units a year, will hit 150,000 by 1964. The Borg-Warner transmission, with modifications, is used by 11 British cars — Jaguar, Ford Zephyr, Austin, Wolseley, Daimler, Humber, Aston - Martin, Rover, Standard, Alvis, and the Austin taxi.

U. S. manufacturing activities abroad have given rise to an estimated 5 million jobs for foreign persons, including more than 2 million directly on the payroll of U. S. firms, reports the Nation-Wide Committee on Import-Export Policy.

Some economists complain that U. S. firms investing overseas are doing little to combat foreign competition since they provide no stateside jobs. Comments the Alexander Hamilton Institute: "Mitigating the worker's loss is the stockholder's gain, and the worker can also

Facts You'll Need to Enter Foreign Markets

Set Your Marketing Objectives

Answer these questions:

Is "X" country a good place to invest your money? What products should you make? What volume and profit can you expect? Does the return meet company standards?

You'll also need these answers:

- Five to ten year forecast of total industry sales.
- Characteristics of the products now on the market.
- Characteristics of the market.
- Number and strength of competitors, degree of competition.
- Standards of design, performance, and price that your product will need to compete successfully.
- Method of distribution required.
- Expenditure necessary to distribute, sell, and promote successfully.
- Share of industry sales you can expect, what income you'll get.

Study the Economy of the Country

Pay particular attention to trends and rates of change for:

- Population.
- National income and principal source.
- Income per capita and per family.
- Average wage level.
- Gross national product, retail sales, currency value.
- Electrical output, value of manufacturing.
- Principal imports, exports, and their value.
- Climate and topography and effects upon economic and population growth and dispersion.

Get the Product Data

You'll need to know:

- Consumption (production plus imports less exports) by year, product type, and price range for last five years.
- Trends in local production vs. imports.
- Percentage of families owning product.
- Desire and intention to buy the product.
- Potential customer groups, where located and what proportion of the population they represent.
- Who makes and influences buying decisions.
- What persuasive approaches are best calculated to influence prospects to buy.
- Frequency of purchase and seasonal buying patterns.

Study the Competition:

- What companies are importing or manufacturing locally?
- Brands, types of products, price range offered, and approximate share of the market of each competitor.
- Consumer preference by brand, type, price range.
- Quality, performance, design of competitive products.
- Appropriateness of the design for the market.
- Prevailing trade discounts at wholesale and retail levels.
- How the price structure at retail level is maintained —by law, custom, or manufacturers' suggested price.
- What firms have best and poorest relations with distribution channels? Why?

Study the Channels of Distribution

- Are door-to-door salesmen used by manufacturers or retailers? To what extent?
- Types of wholesalers and retailers that stock the product and its relative importance to them.
- Approximate number of wholesale and retail outlets available in principal markets.
- Selling, promotion, service and stocking functions done by wholesalers and retailers—functions which must be supplemented by manufacturer.
- Transportation facilities for reaching markets. Warehouses available.

Don't Forget These Factors:

- Advertising and promotion—What type will be required? How much will it cost? What media are available? What are competitors doing?
- Repair and maintenance services—How will you handle them? How are competitors handling them?
- Credit—terms are often far more liberal overseas than in the U. S. Is there a capital shortage? How much money will you have to tie up?
- Sociological factors—if you're selling appliances, for example, is there a general recognition of the benefits of labor saving devices? Is domestic help cheaper than the appliances? Is home wiring normally adequate?

World Trader Tells How to . . .

Pick the Right Man for Overseas Post

It's relatively easy to find good engineers, reliable accountants, and dependable technical experts of all kinds for foreign posts. But you'll have real difficulty locating high level liaison officers, over-all organizers, and commercial chieftains. So says S. J. Rundt of S. J. Rundt & Associates, consultant on international business.

THE MAN YOU WANT MUST HAVE THESE QUALITIES:

Tolerance

The American must realize that others have the right to do what they please on their soil. We are the foreigners who must conform.

Knowledge of the Country

The man must know and like the place where he is located and believe in its future. He must learn the language, know the country's history, geography, government, sensitivities and etiquette, economic factors and customs, peculiarities, prejudices, superstitions, currency, and the many intangibles and imponderables of the foreign land.

Flexibility

Mannerisms and attitudes need adjustment as much as marketing approaches and product design. Our hero (and his wife) must adjust to strange—often weird — local conditions. Kleenex may even cost more than a first-rate laundress. One successful representative abroad was hired by a worldly wise president because he gave the right answers to two questions: "What would you do in case a local merchant stopped you on the Avenida Rio Branco and you were hurrying to be punctual for another appointment?" Said the applicant: "I'd stop to have a cup of coffee with him." The president responded: "But what would you do if you were already late for an

be a stockholder. Some companies, in setting up foreign branches, are battling for survival, and survival, even if only temporary, is fundamental."

• **Export** — "Exporting is recommended if tariffs on your products are expected to be low for a significant period, if long term prospects are uncertain, and if you have important production advantages in the U. S. not available in Europe," says Mr. Smiley.

Surging nationalism, with an increasing desire by foreign governments to protect home industries (via quotas, high tariffs, and other restrictions) is causing many world traders, especially makers of consumer goods, to look upon exports as only a short term approach. Singer's Mr. Burchill says exports are "a dying duck." Homer Persons, general manager, Brakeblok Div., Brakeshoe International S.A., a subsidiary of American Brake Shoe Co., says: "I can't see anything but an accelerated rate of shrinkage for export markets. Not that we're writing off the foreign market because we expect to be in the export business for a long time. But the long term prospects are anything but glowing."

Still, a strong export market for some kinds of products will continue. You must determine whether yours is in that class. After all, exports are more important to this country today than ever before. We are not self-sufficient. We must import many commodities. And we can't import if we don't export.

• **License**—"Resort to licensing if you're not willing to risk significant capital and manpower resources, and if you have important technical advantages," advises Mr. Smiley. And don't forget cross-licensing.

• **Branches**—Says Mr. Smiley: Es-

In battling camera imports . . .

J. J. Riggs, president (left) and James Brinkerhoff, operations manager, study features of new, Autronic, 35 mm camera

appointment made a week before?" Said the applicant: "I'd probably have two cups of coffee." He was promptly hired. By now, he knows every individual in Rio worth knowing. In Rio, no one arrives for an appointment on time (but in Caracas, they often seem to outhustle New Yorkers).

Humility
To patronize, to condescend, or worst of all, to play the superman, can transform the most pro-American foreigner into a veritable Yankee hater.

Justice and Fairness
"The customer is always right" holds just as true in Lima, Peru, as in Lima, Ohio.

Curiosity and Interest
The candidate must be an accurate observer, a patient investigator, a logical analyst, and a lucid reporter. He should be a deft negotiator, willing and able to give himself to the pace and procedural manners of those whom he'll contact. Without those characteristics, he won't be an adequate catalyst and mediator across the seas.

Balance
He must be conservative but have a sense of originality—dignified without being a stuffed shirt; not be a back slapper but have a cosmopolitan sense of humor. He must operate with gusto and social ease, be able to deal with laborers and clerks as well as the top echelon in foreign industry, banking, commerce, society, and government.

Analytical
He should be seasoned in assessing unique market conditions, variations in distribution methods, differing commercial and financial usages, currency matters, foreign labor difficulties, tax problems and government restrictions, public relations requirements that differ from the Madison Avenue pattern, and social customs.

Respectable
He dare not try to endear himself emotionally; rather, he should win intellectual acknowledgement and then the faith of the people he must deal with. Dignity can't be bought; esteem must be earned.

Communicative
He must be able to express himself succinctly at all times so he can bridge the gap between the two worlds he must link. The quality to argue convincingly on two fronts and be equitable toward two sides is basic.

Objective
He must remain American, lest he lose sight of home office objectives. He certainly must integrate himself where he is, but he must forever maintain his umbilical cord with the policy and basic thinking back home. He must be diplomatic but determined, flexible but principled.

Long Term
He must be willing to accept an arrangement offering continuity to his employer. He should be fully compensated for all the disadvantages that go with the job, including such intangibles as loss of contacts at home, removal from old friends, and the inconveniences suffered during long periods abroad—like not being able to get his favorite brand of cigarets.

Says Mr. Rundt: "If he is also familiar with your line of products and production, chances are he's a miracle—or a talented thinker. If he has also held a comparable position anywhere in the world, his discovery is tantamount to holding a full house."

tablish sales, engineering, and contracting branches if the sales, design, and servicing functions are a major factor in your business and if heavy investment is not feasible. He says the practice is often the initial step toward a world enterprise. It allows testing of marketing and manufacturing conditions without heavy investment.

Know the Market

Many U. S. firms have failed to realize their full potential in the world market because they didn't diligently scout the areas in which they wanted to sell. Just as knowledge of the U. S. market can give U. S. firms an advantage over foreign competition, so knowledge of foreign markets gives foreign firms an advantage over their U. S. competitors.

The checklist on Page 73 points up some of the important areas of study for the U. S. manufacturer. They apply to U. S. markets too. Experts offer this additional advice:

- **Know Industry Size and Struc-**

Design Gives Argus Potent Assist

Design has given Argus Cameras Inc. a potent assist in meeting foreign competition.

Beginning in 1955, Argus' sales were hit by a barrage of low priced, high quality cameras from Japan and Germany. By 1959, the impact on 35 mm cameras, Argus' forte, became critical. Profits dropped.

"The only solution we could see was to fight back with the best possible product at the lowest possible price," says J. J. Riggs, president. So Argus, a marketing subsidiary of Sylvania Electric Products Inc. (itself a subsidiary of General Telephone & Electronics Corp.), designed a new camera.

"Our objective," explains James Brinkerhoff, operations manager, "was to come up with a product the Japanese and Germans didn't have. We decided on a fully automatic, 35 mm unit with a built-in light meter that automatically makes all adjustments." Other design goals included:

- Sheer lines that look modern, yet in good taste.
- Expensive appearance—achieved through the use of chrome plating and substituting vinyl paint for former leatherette cladding.
- Compactness and "right" weight—not so heavy as to become burdensome nor so light as to convey cheapness.
- Simplified features—"We wanted our product to be as easy to operate as a box camera, yet have the features to entice the sophisticated buyer," relates Mr. Riggs.
- **Imported Parts**—To deliver the unit at a price competitive with imports, Argus found it had to import parts with high labor content—like shutters and meters which it gets from Germany. And by improving manufacturing techniques, the company was able to cut the cost of producing lenses below the price of Japanese imports.
- **Result**—The Autronic camera which sells for $88, is competitive with foreign models. Sales are running faster than production. "It'll take another six months to catch up with demand," says Mr. Riggs. "We're so enthusiastic, we're thinking of entering the export market."

Tailor Your World Market Approach . . .

Don't Be an 'Ugly American'

JAMES A. NEWMAN, partner,
Booz, Allen & Hamilton

The ugly American is a real —and detested person. He's the U. S. manufacturer who approaches the world market with indifference, or lack of knowledge, or an attitude of superiority. He's the man who sent Christmas greetings to his Moslem customers. He's the man who can't understand why his ultramodern, overdecorated, doodad—that sold so well in the U. S.—is getting the cold shoulder abroad. He's the guy who thinks all foreign businessmen are "monkeys"—who have just dropped out of trees into contraband Cadillacs. And he's the guy who only researches the size of the market, not its important—though perhaps intangible—characteristics.

That man is missing the opportunity that could mean the difference between growth and death for his company.

The U. S. has a terrific inherent advantage in the world market. As Mr. Newman puts it: "We've seen the movie before. We've watched the U. S. market achieve its huge proportions. We know how the customer will react as his standard of living rises. As living standards improve abroad, we know how the characters in the movie will play their roles. We can anticipate what they will buy first, where they'll buy it, about how much they'll pay for it, what they'll buy next, and even—to a degree—what they will buy after the next thing they intend to buy."

Mr. Maggin lists TV set buying as an example. Look at the market saturation curve for TV sets in Great Britain. You can superimpose it on the curve for the U. S. and the only major difference will be that the event took place in Britain at a later date. Now the pattern is repeating itself in Germany. The aggressive TV maker knows where it will hit next.

By the same token, Messrs. Newman and Maggin list motels, supermarkets, and packaging as three of the biggest European growth markets.

But the two consultants warn that you'll only capitalize on your advantage if you adapt your overall approach to the specific needs and characteristics of each market. Example: The Englishman likes his house temperature at 60° F (vs. about 70 for the American). So if you sell heating equipment, you must adapt your product design and marketing approach to that characteristic.

Warnings:

- **Gage the underlying impact of customs, traditions, racial and religious differences.**
- **Don't disregard a market solely because you dislike the country's political tendencies.**
- **Exploit markets in the most profitable sequence.**
- **Watch differences in the connotation of words.**
- **Live the life of the country. Don't isolate yourself from the common people in the market you're trying to obtain. But likewise, don't go so far overboard that you lose sight of home office objectives.**
- **Provide for an adequate flow of information both ways between home base and foreign office.**
- **Use every ethical tactic to gain customer acceptance. Example: Hoover has done this so well that the English speak of "Hoovering their floors."**
- **Hire nationals in your marketing organization.**
- **Establish good banking contacts at home and abroad.**

DONALD L. MAGGIN,
Overseas planning director,
Booz, Allen & Hamilton International Inc.

ture—Find out what kind of competition you'll face. Examine production, employment, domestic consumption, and foreign trade figures. In Europe, give emphasis to intercompany agreements and the pattern of company size, Mr. Smiley advises. He says cartels will retain power well into the 15 year transitional period in the two free trade areas. European restrictive practices are often complex and extend deeply into related and customer industries. A tie-in agreement between a maker of TV sets and suppliers of parts, for example, is an accepted practice, Mr. Smiley reports. And one large auto firm owns shares in several body styling firms serving the whole industry.

- **Know Sales Methods and Costs—** In general, the gap in manufacturing methods between the U. S. and Europe is not as great as the gap in distribution and sales methods. European retail distribution represents our own of the 1920s, says Mr. Smiley. But the pattern is changing rapidly. Mr. Rundt warns that distribution methods will vary greatly from one area to another. In one place, it may be best to sell

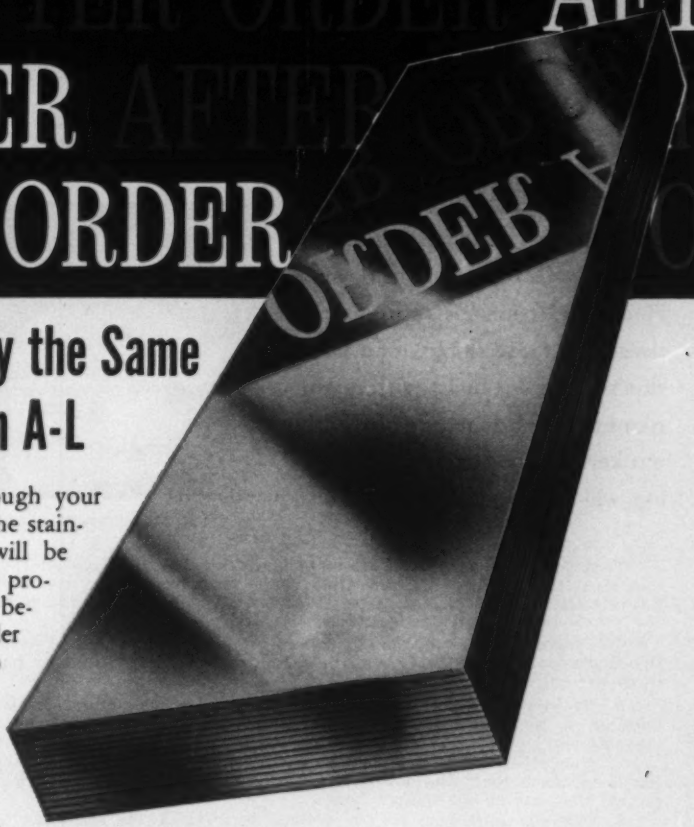
ORDER AFTER ORDER

AFTER ORDER

AFTER ORDER

ORDER

AFTER ORDER



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Every lot of stainless sheet will go through your plant with consistent good results when the stainless is from Allegheny Ludlum. There will be none of the hidden costs that come from production delays due to variations. That's because A-L stainless sheet is processed under strict quality control—from chemistry to finished gage to pickling solutions and right on through the entire cycle.

A-L quality control extends to you, the user. Our mill people make regular visits to check on the quality being furnished customers. You need only a phone call to get help in processing stainless from Allegheny Ludlum.

Evidence of the consistent high quality of Allegheny Ludlum stainless sheet is seen in polishing. Often polishing costs of A-L stainless sheet are half that of competitive material. Remember, all A-L finished stainless sheet stock is made to polishing quality standards.

For consistent temper, tolerances, and finish in flat rolled stainless products, call your Allegheny Ludlum salesman, or write: ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania. Address Dept. S-9-1.***

ALLEGHENY LUDLUM

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

1719

via commission agents; in another, through exclusively franchised distributors, buying in their own rights; in a third, a subsidiary may be the solution; and in a fourth, open market sales may be best.

• **Know Basic Factors**—Learn such facts as the percentage of illiteracy, birth and death rates, infant mortality, average annual per capita income, income breakdown by population segments or classes, assets and liabilities held by a central bank, wage-price structures, rise and fall of bankruptcies, investment as a percentage of gross national product, wholesale and retail profit structures. Many foreign governments issue phony statistics. Detection of their spuriousness requires meticulous comparisons and detailed searches for inconsistencies.

• **Know Customers' Problems**—The more you know about your potential customers' problems, the easier it is to sell them. Learn about currency difficulties, licensing troubles, regulations prescribing the advance deposits the customer must make (perhaps in a tight credit season), the duties he must pay, and the terms forced upon him by the laws of his country.

• **Know Location and Access**—Mr. Rundt says manufacturers often fail to give this question the study it deserves. For example, he says: "While Switzerland is landlocked, it is cheaply reached by Rhine barges and Basel is a major inland port. Iquitos, Peru, is a major transshipment point for goods destined to westernmost Brazil via the tributaries of the Amazon."

• **Watch Social Costs**—Mr. Burchill warns you to pay special attention to the "social laws" in various foreign areas. In Peru, an employee has "stability" after 20 years. He can't be fired. In Colombia, after 30 years of service and age 55, an employee gets a pension equal to 100 per cent of his wage. Also in Colombia, the employer must pay his employee's drugstore bills—"even for the aspirin the employee takes for a hangover," says Mr. Burchill. He says the laws are usually well defined and easy to administer.

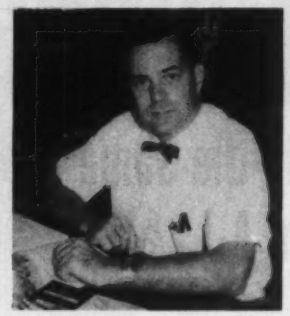
• **Know Customs**—A sure route to failure in foreign markets (which, unfortunately, many U. S. firms have taken): Don't observe local customs. That explains why most successful world traders hire nationals in their marketing organizations. And it shows why some unusual persons serve as top overseas envoys for large U. S. firms. One, for example, is a former merchant marine ship's master. Another is an ex-paratrooper. A third swabbed the decks of tramp steamers to see the world 20 years ago. The fact also points up why many foreign operators are not transferable to any region other than the one with which they are familiar.

Before entering a foreign market, you should learn languages, customs, traditions, daily habits, social musts and taboos, prides and prejudices, dislikes and preferences, cultural attitudes and inclinations, social structures and government sys-

Exporting and licensing . . .

Easiest Route to Overseas Sales

Develop a good proprietary product. Get your costs down. Find good overseas representatives. Do those things, and you don't have to build a foreign plant to take advantage of world markets. Exporting and licensing will do the job.



ROBERT MACOMBER

That formula has proved effective for Macomber Inc., a construction steel fabricator in Canton, Ohio. The firm has grown and built its reputation domestically on a steel frame building system called the V-Lok and Allspan steel joists.

"We have licensees in Canada, France, England, and Spain," relates the firm's young president, Robert Macomber. "We feel licensing has three definite advantages:

1. "If you don't have the money or the market doesn't justify building a plant overseas, licensing is the easiest entree to world markets.

2. "Licensees offer readymade marketing organizations—our key job is to teach them the V-Lok concept and our product's advantages so that they can go out and sell both.

3. "Equally important as the income received is the exchange of technical knowhow. Our contracts call for each party to exchange both product and processing improvements which may be developed. For example, we've been able to get good tips on improving our roll forming techniques from our French licensee. Our Canadian licensee has developed some testing equipment which is superior to ours, and we're considering installing something similar in our Canton plants."

Volume and production efficiency are twin keys to Macomber's success in exporting. "If it weren't for the high tariff and the fact that our water transportation costs are based on bulk rather than weight, we could put our products down in the home town of our French licensee for less that he can," says Mr. Macomber. "In British Columbia, due to higher Canadian transcontinental rail freight rates, we can be competitive with our Toronto licensee even though we pay a 22½ per cent duty."

"Remember this," stresses Mr. Macomber. "U. S. firms generally have the volume advantage over foreign plants which haven't been serving as large a market as domestic plants. Consequently, our high production facilities turn out products at lower unit cost, even with our higher wages."

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Replace improvised units with readily available precision cam followers.

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The original and still unsurpassed anti-friction roller bearing cam-follower bearing that adds efficiency at less cost to cam actuated, track and support roller applications. Built with full roller complement and integral stud, the CF series design provides high radial capacity and shock load protection in a compact roller with its own shaft. Easily applied and available in roller diameters of ½" to 4".

for the ultimate in:

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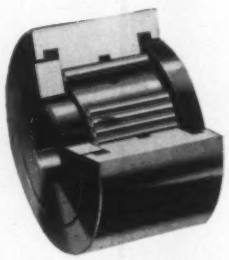
Sealed to keep contamination out and lubricant in. It is dimensionally interchangeable with the CF bearings. A turned groove in the center of the outer raceway bore provides a permanent lubricant reservoir to approach life-time lubrication requirements. Can be easily re-lubricated.



SCYR SERIES (sealed)

CYR (Cam Yoke Roller) SERIES

The CYR series increases the adaptability of the CF bearing to all types of automatic machinery involving cam action or controlled-motion machine parts that require guide or support rollers. An inner ring replaces the stud for cam yoke roller mountings.

Write for Catalog No. 52-A for full information on McGill's needle roller bearings, and cam followers. Ask about recommendations for high precision special ball and roller bearings.

SCYR SERIES

This series provides a fully sealed Cam Yoke Roller type bearing. It is dimensionally interchangeable with the CYR bearings.

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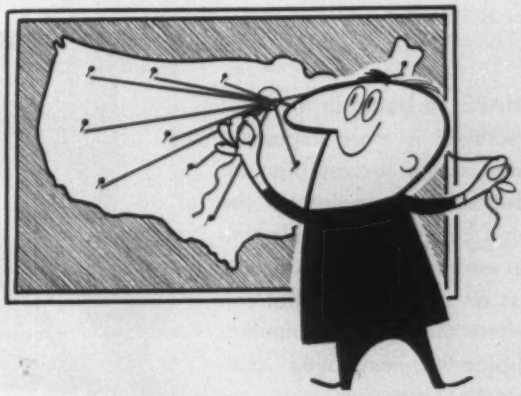
precision needle roller bearings

To combat foreign competition . . .

Play Up Your Advantages Of Proximity To the Market



Better Delivery—

You can better tailor deliveries to meet the user's production requirements. He doesn't have to tie up capital in large inventories.

Service on returned material can be important. Lots of red tape and time are involved if parts are of foreign origin.

Better Engineering Service—

Your proximity to the customer enables you to provide engineering knowhow and service to help him solve problems, improve his product as your part affects it. The ability to help in an emergency is a valuable sales tool.

Consistent, Frequent Sales Contacts—

Comments by Vernon C. Thomas, purchasing agent, Ludlow-Saylor Wire Cloth Co.; "I value these contacts. They help build friendly relations; help me keep pace with business in my own and other industries; help me keep pace with new materials and processes."

Reciprocity Business—

As a sales tool, it's frequently denied and seldom discussed. But it is being done.

Reputation—

You've a head start here. Strive constantly to build upon it.

tems, intellectual and religious concepts, financial practices, and commercial usages.

• In Islamic lands, all symbols depicting the likeness of animal or man are in violation of the Koran and must be avoided. Watch your trademark.

• On the west coast of Africa, no trademark may show doubles—two of a kind.

• The ability of an area to absorb a given product is often underrated. Japan, for example, is a major market for classical phonograph records.

• Be careful of verbatim translations in folders, catalogs, and advertising material, Mr. Rundt warns. He says in France a brassiere is an infant's undershirt.

• Watch the timing of your visits abroad. To arrive in Rio during a carnival transforms any business effort into an orgy that's anything but commercial in nature. Only an invasion of Dublin on St. Patrick's Day would be comparable, says Mr. Rundt. On weekends, neither a St. Bernard dog nor the *Polizei* will be able to locate the average Zurich entrepreneur. In some exotic countries, Friday is Sunday, and in Tel Aviv, it is Saturday.

• **What to Do**—U. S. manufacturers must do considerably more research in the markets they are trying to reach, asserts James A. Newman, partner, Booz, Allen & Hamilton. He says there is a terrific lack of market research knowhow abroad. It stems partly from the fact that a seller's market has existed for a long time in most foreign lands. But customers are becoming more selective, Mr. Newman points out. So market research will play an increasingly important role.

Failure to do market research has injured some foreign firms drastically, says Mr. Newman. He points to the motor scooter and motorcycle industry. It experienced a boom in the early 1950s. So manufacturers added considerable capacity in 1954 and 1955. Then the cheap, bug-type cars came along, and the bottom dropped out of the scooter and cycle business. Mr. Newman says scooter production in Germany fell from 300,000 units in 1955 to about 28,000 last year. Manufacturers are left with considerable excess capacity—which they probably wouldn't have built if they had done intelligent market research.

• **Roll with Punches**—American Brake Shoe runs continuing surveys of industrial development in countries that are not markets for its products but which might be eventually. "We try to be flexible and fast on our feet so we can shift emphasis to the areas with greatest potential," explains the firm's director of exports, Harold Osborne. Example: When the Chilean market for mining equipment components was suddenly lost as the government imposed import restrictions to protect local industry, the company quickly concentrated its sales efforts on

How to Convince Employees of the Foreign Threat

PERHAPS no battle in the fight for survival is more important to long range success than an all-out effort to point up the foreign competition problem to your workers. Singer Mfg. Co. offers an example of what can be done through a continuing, well-planned, employee communication program.

Imports of low priced Japanese sewing machines jumped from 16,000 in 1949 to 934,000 in 1958, when the Japanese claimed nearly two-thirds of the U. S. market. Main reason for the gains: Singer pays its U. S. production workers 11 times the wages and fringes paid their Japanese counterparts. Singer management was determined to eliminate featherbedding and get premium quality work for the wage premium it had to pay. Thanks to an effective communications program, management was successful. Here's what took place at the Elizabethport Works.

● **First Line**—Singer's first line of communications is its monthly plant newspaper, the *E'Port Observer*. Here's how Singer used the medium to tell the foreign competition story in 1959.

February Issue—1. A chart showed the phenomenal growth of imports—emphasizing the low cost Japanese models. 2. Another article was based on President Eisenhower's plea for restraint in wage demands.

March Issue—A story and chart showed how Japanese machines were outselling Singer in the U. S. The story said: "None of the imports came from the Pine factory (in Japan) in which Singer owns a half interest. Paying Japanese wages in that factory, Singer has no difficulty competing against other Japanese companies in the Orient."

April Issue—An article pointed up management efforts to cut costs through investment in more efficient facilities.

Peru, where a mining industry expansion was creating a growing market.

Sharpen Product Design

Having complete knowledge of the market, then, is necessary. But the facts will do you no good unless you act upon them. Most important: Design your products to conform to the market characteristics you've uncovered.

Ray R. Eppert, president, Burroughs Corp., describes the international design challenge this way: "We must aggressively export Model II products while our foreign competitors are in the Model I phase. As they move into a Model II position, we must be ready with Model III." And that philosophy fits equally well when competing against foreign products in the home market.

● **Design for the Market**—Sales success at home is no guarantee that you can deposit your product overseas and wait for stampeding customers. In some countries, the customers aren't ready for—or can't use—the features that Americans demand. Or the customers abroad may demand an entirely different feature. Example: A refrigerator without a wine compartment just wouldn't sell in France. Shock absorbers that Gabriel Co. exports to South America are designed for severe road conditions. Singer Mfg. Co. sells treadle-type sewing machines in Latin America and hand machines in Africa.

You may even find a new use for your product overseas. Example: Motor scooters which are sports items in the U. S. become trucks (with little trailers) in Viet-Nam.

Or you may find it advantageous to design products to use local components. Mr. Maggin says many European firms do that. Jervis B. Webb Co., Detroit conveyor maker, finds it frequently must include foreign components, such as bearings, chains, and motors, in its designs to win a contract. The company also mentions the necessity of designing to foreign standards.

● **Design for Price**—Admiral Corp. has designed a radio to sell for $9.95

May Issue—A report showed Singer's 1958 sales were up, earnings down. A chart depicted the percentage of the sales dollar that went to employees (42.4); another chart compared the money paid to employees ($157 million) with that paid to stockholders ($10 million); a third showed Singer's declining profit margins.

June Issue—A story told of Singer's improved 1959 sales and included a statement by President Donald P. Kircher on Japanese price competition.

July Issue—1. Article reported that Elizabethport fringe benefit costs had increased 36 per cent in the last six years. "Fringes alone here equal 2½ times the total of Japanese wages plus fringes," the story pointed out. 2. Another article ("Are U. S. Jobs Being Priced Out of Existence?") told of the effect of foreign competition in other industries. "Some companies just quit business and lay off everybody," the article said, concluding: "It is possible for any job in a competitive industry to be priced out of existence."

August Issue—1. Story on White Sewing Machine Corp. reported that after the firm's employment dropped from 1650 to 500, it stopped making sewing machines and began selling imported models. The story concluded: "If Singer is able to avoid following in White's footsteps, it will be because every employee co-operates with the company's efforts by doing his share to increase manhour productivity and hold down unit labor costs on his job." 2. Another article pointed out: "If you earn the current average wage for the bargaining unit, your pay without fringes equals the company's profit on $167,118 of sales."

September Issue—1. Chart showed that employees' wages had risen more than twice as fast as the cost of living. 2. Story told that production of needles would be halted at Elizabethport due to foreign competition. 3. Another article began: "Some folks think that such subjects as costs, productivity, and inflation are problems for economists—not for factory people. But most of us know that . . . on them rests our job security."

October Issue—1. The company presented its labor contract proposals and told what they would mean in terms of earnings and working conditions. 2. Two pages were devoted to an interview with Works Manager John Roll, explaining the reasons for the company's tough stand on employment costs. 3. Since Singer was attempting to eliminate paying average incentive earnings for time spent on nonincentive jobs, the paper carried a chart comparing labor cost per piece when the employee was working on daywork at average earnings and when he was working on standards. It showed such differences as 18 cents vs. 1.9 cents, 19.3 cents vs. 1.2 cents.

● **Payoff**—Singer and Local 461 of the IUE agreed on a new contract—a resounding victory for the company (and for employees since it is helping to save their jobs). Among contract provisions: 1. Wage increases were exactly what Singer had offered in the beginning. 2. Some pieceworkers were transferred to daywork. 3. Strict limitations were put on incentive pay for time spent off incentive jobs. 4. Bumping provisions were changed in management's favor.

The limitations established on payment of average incentive earnings for nonincentive work has corrected the situation where employees were producing less than one-third the work they were being paid for during the 22 per cent of the time they were off their regular jobs.

● **Support**—The battle was not won through the company newspaper alone — letters to employees' homes, statements and advertisements in local newspapers, bulletin board notices, and other techniques were also used. Singer emphasizes that employee communications must be a continuing effort, must always be truthful, and should reveal such things as the costs of doing business, management's efforts to improve efficiency, the competitive position of the company, and the firm's financial condition.

in answer to mounting imports.

● **Expert Advice** — Lippincott & Margulies Inc., New York industrial design firm, sounds this warning: "Four years from now, New York will play host to the first World's Fair in nearly 25 years. Some 60 million U. S. visitors will be able to compare American products with those of around 50 other nations. In line next to the U. S. visitors will be thousands of potential customers from abroad, making the same comparisons. Will U. S. manufacturers be ready for that kind of side-by-side, reach-out-and-touch comparison?" The designers offer four suggestions:

1. Design to build a brandname. One of the toughest problems in overseas selling is communicating your sales message to people who don't speak your language, and whose customs, traditions, and even religion can present barriers to understanding. The consistent use of an effective trademark helps to bridge the gap.

2. Modular maintenance. One of the biggest problems with U. S. equipment abroad is maintenance. L&M cites the example of the Guatemala hi-fi owner who finds it easier to fly a repairman in from Florida than to get parts from the U. S. delivered to his local dealer.

Suggest the designers: Extend the system now used in some electronic equipment: Divide the functional areas of the equipment into "packages." Each "package" is a self-contained, modular, plug-in unit. Maintenance then consists of unplugging the defective unit and inserting a new one.

3. Design for automated production. Play on our greatest strength —mass production and automation. Products have to be "cleaner and simpler" to cut down on handwork like applying trim.

4. The "semipermanent" product. Some manufacturers might consider a moratorium on the expensive yearly model change. Such products would require designs that are more functional, conservative.

Sharpen Your Marketing

● **Attack No. 1**—Sylvania Home Electronics Corp., marketing arm of

Production Efficiency Pays Off

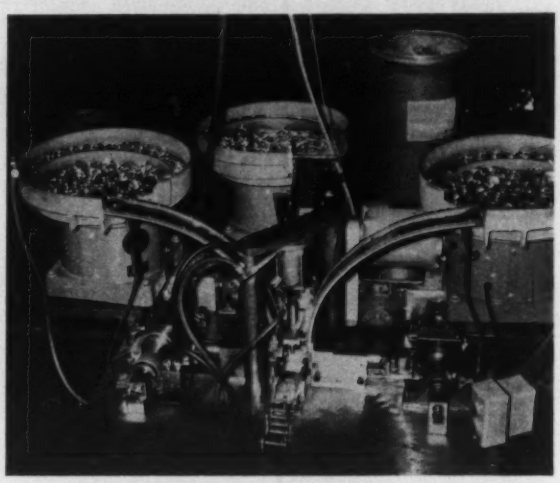
Bronson Reel tells how . . .

Executives at Bronson Reel Co., Bronson, Mich., decided to fight back after watching more than a million imported fishing reels cut into 1958 sales.

They had been the first U. S. reelmakers to crack the $9.95 spin casting reel market. Then imports, priced at $7.95, moved in.

They set their target: Produce a spin casting reel to sell between $5 and $6. Design, help from suppliers, and production efficiency brought success. The new reel, called the Dart, caught on quickly. Backlogs developed. Employment increased 20 per cent. Dart sales stimulated sales of Bronson's 30 other models. The company gained a greater percentage of the reel market than any competitor.

Production efficiency depended upon the ingenuity of many of its engineers and supervisors. Here are three examples of equipment engineers designed and made themselves.



Automated spool assembly. Three vibrators feed components into an automatic assembly mechanism that's controlled by an electric eye. Savings over the former method: 40 per cent of the labor cost

Sylvania Electric Products Inc., for radios, TVs, and hi-fis, has turned imports into an advantage. It is marketing more transistor radios than ever before in the face of a deluge of high quality, low priced, Japanese units. The company: 1. Concentrated even more on maintaining good relations with its dealers and distributors. "The importer's need for high volume sales has often led to direct sales to dealers, alienating distributors and further confusing the already tangled price structure in their markets," says President Peter J. Grant. 2. Promoted the "Made in America" theme. 3. "Above all, we've made it as easy as possible for our customers to buy, stock, and sell our radios. Our sales organization is now geared to offer merchandising aid and product service that we believe is unmatched by any importer or distributor of Japanese radios."

• **Attack No. 2**—Another Sylvania subsidiary, Argus Cameras Inc., has also fought its way back to its former position after being hard hit by a barrage of imports. The approach? "Outmarket the competition," answers J. J. Riggs, president. The firm adopted a total marketing concept. Every manager, regardless of function, went into the field, talked with customers, became market oriented. "We found out what we had to do to regain lost ground," says Mr. Riggs (see Page 75).

• **Attack No. 3**—Rust-Oleum Corp. sent 16 top marketing men into the Common Market and Outer Seven coincidental with the opening of the company's new manufacturing plant at Haarlem, Netherlands. Each learned the language, customers, and industrial atmosphere of the country in which he was to work. They went to Europe in June, will remain four months. "When we leave, we believe that the results from blending U. S. selling techniques with European methods will show lasting benefits," says Robert A. Fergusson, president. What type of techniques? "Demonstration selling, for example," answers Mr. Fergusson. The company has also prepared 152 separate labels in four sizes and six languages for the containers that will be shipped from the Holland plant. For promotional support, the firm will advertise in 20 business magazines published in Europe to reach prime industrial markets. Says Mr. Fergusson: "It's just a start toward an international goal that should bring our foreign sales up to approximately 25 per cent of domestic volume."

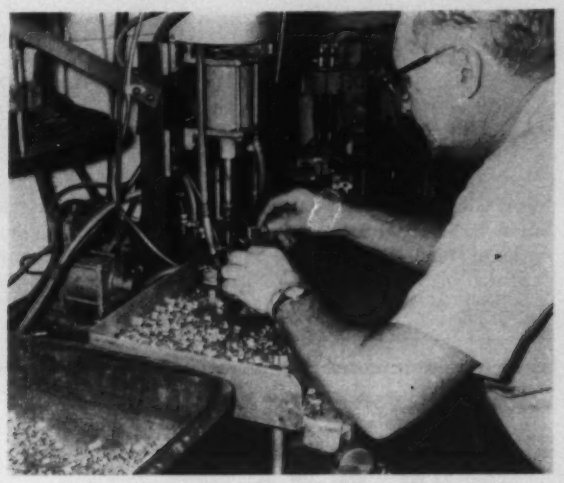
• **Attack No. 4**—U. S., take a lesson: Italy's Olivetti bought controlling interest in the U. S.'s Underwood Corp. Strategy: Push foreign products, under the Underwood label, through the present distribution setup of 700 U. S. salesmen, 1200 servicemen, and more than 500 agents.

• **Attack No. 5**—In Latin America, Singer retails sewing machines through its own stores, through agents, and through local merchants. In underdeveloped countries, Singer machines are sold by traders who barter up and down the rivers. In Siam, the machines are sold from boats on the canals. In parts of the Middle East, bicycle salesmen make door to door calls.

• **Attack No. 6**—Sears, Roebuck & Co. set up a modern retail distribution system in South America. After establishing a market for its products, it trained and aided local industry to produce for the demand it had created.

• **Attack No. 7**—Pepsi-Cola enjoys huge sales in India and Egypt. The nationals buy it because it gives them more nutrition per penny than they can get from their conventional diet. So Pepsi changed its pro-

Automated drilling, reaming, tapping. Operator feeds parts into the machine. Part is then indexed automatically to proper station. Seven operations are done simultaneously; finished part is air ejected



Automated wire staking. Wire feeds from coils, is cut to length, formed, inserted into carriage assembly, and staked. Former method took three hand operations. Savings: More than 30 per cent in labor costs

motion angle from "be sociable" to "get energy."

• **Attack No. 8**—Tourists in Ireland were reluctant to buy ceramic souvenirs stamped "Made in Japan," but the Japanese solved the problem. The imprint still reads "Made in Japan"—but in Gaelic.

• **Winning Friends** — Mr. Rundt points out that taking gifts to contacts abroad can be a profitable procedure. He tells about one businessman who spends days before each trip selecting all sorts of useful, attractive, personalized, amusing, typically U. S. items. He'll also ask his business friends abroad if there is anything they would like him to bring them from this country. Mr. Rundt says a friend of his in Madellin would be hurt if he forgot his bottle of Wildroot hair tonic.

Use Trade Fairs

The person who said "Latins are lousy lovers" might have added "Americans are silly salesmen," believe some experienced world traders. For example, trade fairs have a much more important place in the business [illegible] in Europe than in the U. S[illegible] too many U. S. firms still d[illegible] the benefits they could get from participation.

Reports Robert L. Pritchard, deputy director, Business Relations Division, Office of Trade Promotion, Bureau of Foreign Commerce, U. S. Commerce Department: At a fair in England this year, U. S. exhibitors sold $273,000 worth of goods. Representatives of 24 nations did $43 million worth of business in 18 days. Attendance: 1.8 million.

• **Why Fairs Help**—They provide an opportunity to demonstrate your products to many potential buyers; they permit considerable personal contact; they allow comparison of quality and price with the products of foreign manufacturers; they give you a direct test of customer reaction; they guarantee you an interested audience; they give your salesmen valuable experience; and they act as effective institutional advertising, says Mr. Pritchard.

• **How to Participate**—Harold Allen, Commerce Department fairs and exhibitions chief, lists factors to consider when going to a foreign trade fair: 1. Your exhibit should be selective, designed to supplement an established sales program. 2. Space rental is $9 to $12 per square meter (1 sq m = 10.7639 sq ft). 3. Your stand will probably have to be built and decorated abroad since it's rather expensive to ship. (However, Isbrandtsen Co. Inc., worldwide shipping firm, has started a "mobile trade fair program," to promote the sale of U. S. products abroad. The firm bears the entire cost of shipping and exhibiting U. S. products chosen for its program.) 4. Check whether utilities are available to run your exhibit. 5. Determine what advance advertising to do. 6. Find living quarters for your staff. 7. Arrange for local help. 8. Get insurance. 9. Notify the closest U. S. commercial attache that you will exhibit. 10. Determine whether you'll need an import license. 11. Quote prices, delivered, in the local currency. 12. Follow through.

Fight the Credit War

We are marketing in a global buyers' market—so we must sell terms as much as merchandise. Says Singer's Mr. Burchill: "To a large extent, price does not matter; it's the down payment and the monthly payment that people consider." Adds Mr. Rundt: U. S. banks and manufacturers will have to adjust themselves to take greater risks in an increasingly risky world. The superior financial potency and liquidi-

ty of U. S. companies—far greater than that of their rival numbers abroad—should be turned into a strong point in our favor.

Russia is making it imperative that we give easier credit terms. In the economic war that Mr. Khrushchev has declared against the U. S., credit terms will be a prime weapon. Says Mr. Rundt: "We shall have to compete with terms that may exceed anything that might be justified in ordinary international trade."

Scores of U. S. firms are losing hundreds of orders in the war of commercial credit that is raging pretty much around the globe. "Attractive credit terms are today more often than not the factor deciding the fate of an export deal," says Mr. Rundt. And credit terms are a great weapon against foreign competition in the domestic market too.

Declares Mr. Rundt: "Credit competition is where we could easily lick anybody."

Mr. Rundt points out that credit losses in foreign trade have always been consistently and considerably below those in the domestic field. Insurance is available.

Beware of Graft

"If you think there's a lot of graft in the U. S., you ain't seen nothin' yet," one world trader told STEEL.

In one country, the proprietress of a de luxe bawdy house received a substantial share of the allotment of import permits for a basic raw material. They were tendered in settlement of services rendered and profitably resold. She got the permits in exchange for a life membership in her exclusive "club" for an accommodating and influential commerce ministry executive.

"In Spain, the Arab countries, South America, and parts of Africa, graft is a way of life," asserts the vice president of one world trading firm. He was in Ghana one week after the country got its independence. The customs officer (whom the American had seen many times before) asked for money because he was "thirsty."

"This kind of thing is common, but must be strenuously avoided because, like blackmail, it snowballs on you," say world traders.

Watch Change in Tactics

Foreign manufacturers are attempting—with substantial success—to change the public image of their products. Time was when imported meant only "cheap" or "copied." Today, there's a not so subtle campaign in progress to make imported synonymous with "high quality."

For example, in the 1930s, many foreign firms tried to approximate the name of a U. S. competitor. So bearings were coming into the U. S. marked "Timke, USA." (Usa is the name of a town in Japan.) A few firms still complain that they receive merchandise returned for defects only to find that the items were made abroad. "Many times, the U. S. customer sincerely believes he has received a U. S. product rather than an imported copy," says James D. Secrest, executive vice president, Electronic Industries Association. One manufacturer claims the Japanese did such a good job of copying his product that they even copied a slight flaw in a switch. And the switch, which takes 21 cents worth of labor and materials when made in the U. S., is being sold as a Japanese import in Chicago for 12 cents.

Such tactics, while they are still

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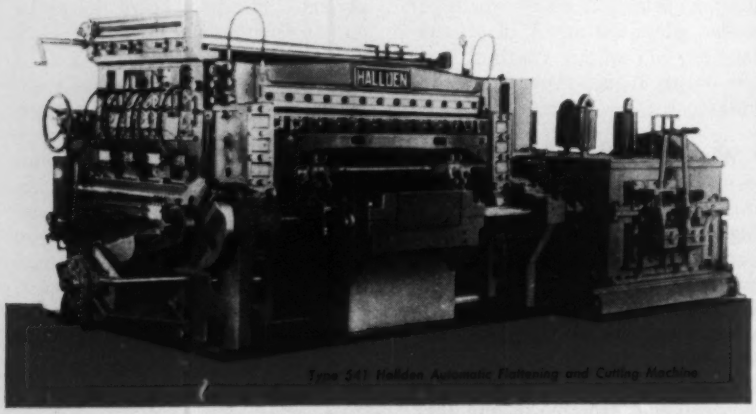
announces

the addition of HALLDEN equipment to their complete line of steel mill equipment. Hallden and Stamco, teamed together... available from one source for complete integrated planning.



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Another example of National Roll quality control

Deac Scholl, sales manager at National, discusses steel roll machining with Joe Rebar, right, roll shop superintendent.

Contour machining gives more precise shaped rolls

Some of the most impressive equipment installed in National's roll shop are the large contour lathes. Some of the largest ever made, these lathes faithfully follow the lines of carefully made templates in machining grooved steel rolls for the shaping of steel beams, rails and a multitude of other end products.

Lathes, grinders and other roll shop equipment at National have been selected specifically for the finishing of steel, iron and nodular iron rolls. A walk through this shop will convince you of the emphasis placed on quality in this phase of National's roll production.

We'd like to have you visit our modern roll producing plant at Avonmore. Failing that, we'll be glad to send you a new brochure which describes our new facilities, one of the reasons that...

National's the growing name in rolls

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OHIO
American Malleable Castings Co., Marion
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Dayton Mall. Iron Co., Ironton Div., Ironton
Dayton Mall. Iron Co., Ohio Mall. Div., Columbus 16
Maumee Malleable Castings Co., Toledo 5
National Mall. and Steel Castings Co., Cleveland 6

PENNSYLVANIA
Buck Iron Company, Inc., Philadelphia 22
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TEXAS
Texas Foundries, Inc., Lufkin

WEST VIRGINIA
West Virginia Mall. Iron Co., Point Pleasant

WISCONSIN
Belle City Malleable Iron Co., Racine
Chain Belt Company, Milwaukee 1
Federal Malleable Company, Inc., West Allis 14
Kirsh Foundry Inc., Beaver Dam
Lakeside Malleable Castings Co., Racine
Milwaukee Malleable & Grey Iron Works, Milwaukee 46

These companies are members of the Malleable Castings Council

heard of occasionally, are giving way to a smarter, more sophisticated, more imaginative approach—which spells even tougher competition.

Whet Your Service

Customer service may be the U. S. manufacturer's strongest marketing point in the battle against foreign competitors for U. S. markets. Vernon Thomas, purchasing agent, Ludlow-Saylor Wire Cloth Co., St. Louis, whose firm is competing against imported products and against products made in the U. S. with foreign steel, flatly refuses to buy imported steel. His major reason: U. S. steel companies offer much better customer service—metallurgical assistance, advice on selection of materials, consistent sales calls (which he treasures as idea stimulants), rapid delivery, and good quality control.

But many U. S. firms have failed to extend the same topnotch service to their foreign customers. Firms which have given good service abroad—Hoover, Singer, Gillette, American Machine & Foundry, Caterpillar, LeTourneau-Westinghouse, to name a few—have prospered in world markets.

If you're a component maker, or your company is too small to support a world chain of service facilities, you might try a co-operative venture with another company. For example, Broderick & Bascom Rope Co. sells its products through almost all the dealers in Caterpillar's worldwide network. "In the heavy equipment market, you sell service," points up Paul D. Moon, B&B's sales promotion manager. Adds Leonard Clark, sales manager, Standard Pressed Steel Co.: A topnotch distributor setup is a must today.

Strengthen Your Technology

"American industry has been cutting its throat with mass research, over-instrumentation, over-regimentation, over-beautifying, and overbuilding research facilities — overdoing the paraphenalia of showmanship to impress customers and stockholders. The results are frequently pitiful. And too many research executives appear to lack completely the hard boiled, mentally concentrated, wholly dedicated spirit which I saw everywhere in European laboratories." So says Col. Harry A. Toulmin of Toulmin & Toulmin, Dayton (Ohio) consultants.

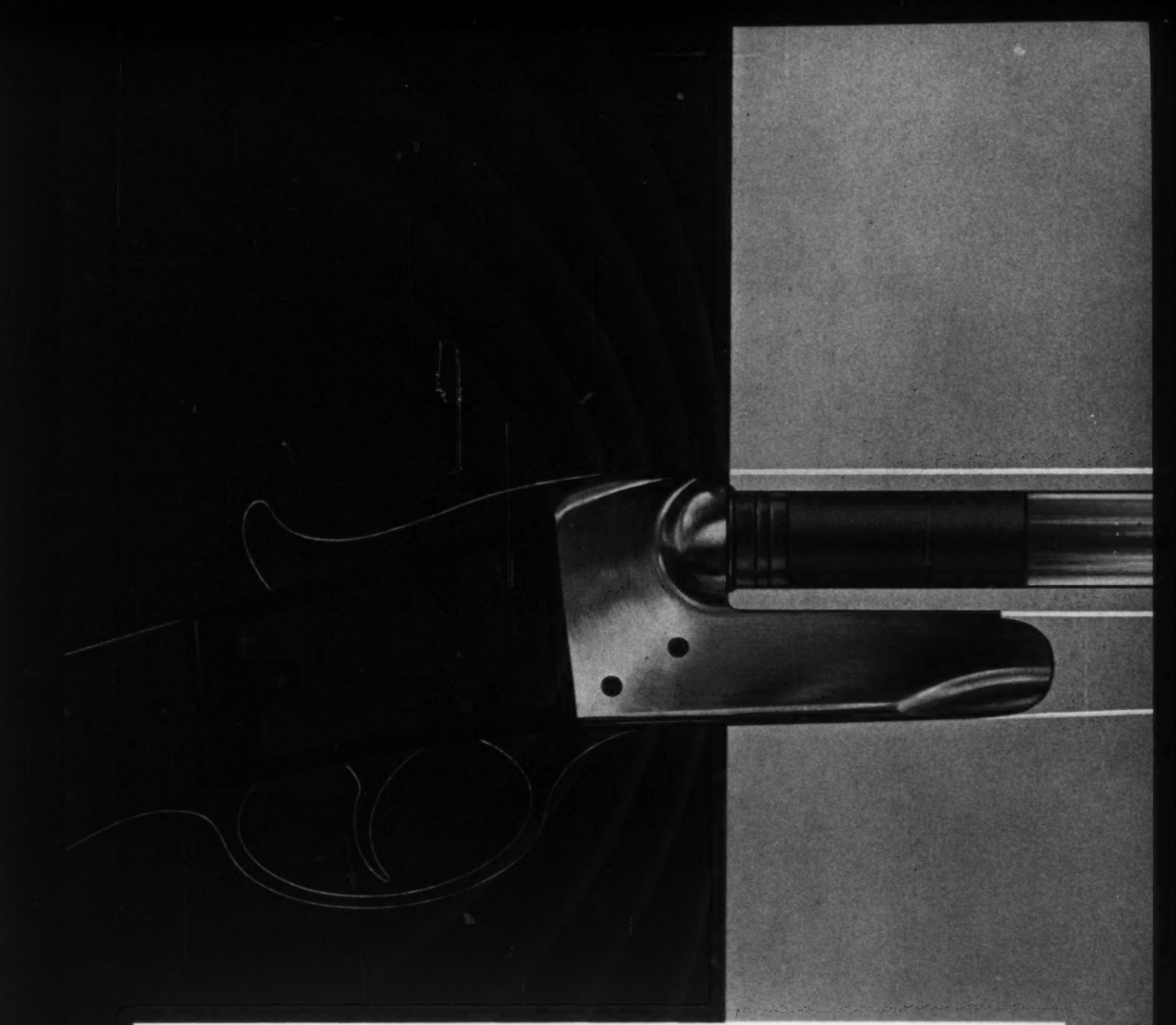
"We, in the U. S., have a tendency to be too busy to be thorough," adds Colonel Toulmin. "European research is superb in the art of being thorough while at the same time displaying technical imagination. It is wisely and effectively selected, planned, and executed. European discipline in offices, shops, and even the executive hierarchy is something we do not dream of here. Europe today is a reservoir of inventions demanding to be licensed or sold in the U. S. As a result, our patent system is fast becoming a foreign passport to European investment in the U. S. market. Never in the 40 years I have been dealing with foreign investors and manufacturers have I witnessed such a wholesale European invasion of U. S. industry and technology as prevails today."

• **What to Do** — Colonel Toulmin proposes: 1. If you can't fight them, join them by taking licenses. 2. Adapt their research faster and on a greater scale to our own manufacturing and merchandising. 3. Get tough with your research and development people.

• **Effective Defense**—"In the domestic market, our greatest defense against foreign competition is quality," says G. H. Woodland, vice president-marketing, Chain Belt Co. He gives this example: "We are now applying our roller chain to our customers' equipment on a more exacting basis so that the imported chain will not stand up on our drive and the customer would have to use a larger size of imported chain to get the same horsepower output."

Sell Employees

The patriotism of production workers is one of the foreign manufacturer's most significant advantages. They recognize the seriousness of the battle for world markets. They know that their jobs depend on export sales. U. S. management has failed to get that lesson in basic economics across to our workers. So, while productivity is generally higher in the U. S.—largely due to automation and im-



Pressure on the face of this Malleable iron receiver approaches 5 tons per square inch each time this 12 gauge shotgun is fired.

For Really Tough Parts...Use Malleable

With high powered charges being fired just inches from your face, you don't want parts that can't take it. That's why so many weapon parts are made of tough Malleable iron castings.

Tremendous resistance to impact, fatigue, deflection, and wear also makes Malleable castings favorites among manufacturers of mining and construction equipment, heavy-duty tools, and other products that require extra tough components.

Have you investigated how Malleable castings will improve your product's performance and cut costs at the same time? If not, send drawings or outline of your requirements to a nearby Malleable castings producer who displays this symbol —

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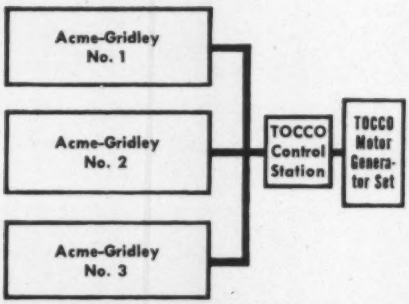
For detailed information on "Toughness", contact any of the progressive companies listed on the opposite page, or Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio.

Pump Shafts Machined and Hardened in ONE operation...



Plan view of TOCCO-equipped automatic screw machine installation for hardening collars on vane pump shafts.

with TOCCO Induction Heating*

TOCCO-equipped 8-spindle Acme-Gridley Screw Machines at a large automotive manufacturer's plant produce vane pump shafts for power steering units in one completely automatic operation! The hardening and metal-working operations are combined on the same machine. No additional handling—no hardening cost except power!

A TOCCO inductor, mounted at one station of each automatic, hardens collars on pump shafts after they have been completely machined at preceding stations on the same machine. Each installation consists of 3 automatic machines equipped with inductor coils powered by a 50 KW, 10,000 cycle TOCCO unit. Production from each installation is 360 shafts per hr.

Shafts are made of C 1144 and only the collar is hardened to prevent scoring the seal. TOCCO's rapid heating confines the hardened area to the surface of the collar leaving the rest of the shaft unaffected.

If your products or their components require heat treating, soldering, brazing or heating for forging, it will pay you to investigate TOCCO for better, faster production at lower unit costs.

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proved methods—the willingness to give a full day's work on the part of foreign laborers tends to offset that productivity advantage.

A few companies have been successful in communicating the urgency of the foreign threat. Singer Mfg. Co. is one (see Page 82).

Kenneth R. Herman, president, Remington Rand Div., Sperry Rand Corp., points up the need for such communications efforts: "For the good of American workers, who after all are our domestic customers, we must help people understand that all wasteful practices must be eliminated. Many union practices create excessive costs, yet really benefit no one in the long run. We will do everything we can to provide better tooling and equipment, better designs and better planning to let our U. S. employees compete with the world." From there, the worker must carry the ball.

● **Union Recognition**—While most union leaders still refuse to admit that foreign competition has become a serious problem, a few have accepted the facts. A. J. Hayes, president, International Association of Machinists, for example, had this to say at a meeting of the Port Chester, N. Y., Industrial Management Club: "I do not deny that foreign trade represents a serious problem for many employers today. We know it does." He added this: "I am opposed to featherbedding in any form—whether by workers or by management." He pointed to management featherbedding through: 1. Overloading of executive levels with surplus vice presidents, managers, and directors. 2. "Inflated expense accounts, stock options, bonuses, country club memberships, and company-paid yacht cruises and hunting trips."

The Payoff

In this special issue, STEEL's editors have tried to present the best thinking of industrial leaders to help you plan your counterattack to regain world markets for metalworking products. The editors are firmly convinced that the potential is well worth the effort. They are also convinced that U. S. metalworking can meet the challenge, if labor, management, and government will all put their shoulders to the wheel.

Companies that have already begun to reap the rewards of world market strategy prove the point:

● Gillette, H. J. Heinz, Colgate-Palmolive, and other U. S. firms report that over 50 per cent of their profits result from overseas sources.

● Singer Mfg. Co. sells around 2 million sewing machines annually through 19,630 outlets in 155 countries.

● American Machine & Foundry Co.'s international group had record sales and earnings last year. AMF tobacco machinery is marketed in more than 70 countries; DeWalt home power tools are sold in 69 countries; AMF wheel goods in 47 countries, and bakery machinery in 41 countries. AMF has nuclear projects in 14 countries, automatic bowling equipment in 58 overseas establishments.

● Argus Cameras Inc. has been so successful in countering foreign competition in the U. S. market (sales were up 20 per cent in the first half) that it is thinking about entering the export market.

Aluminum Foils, Inc.

broadens its scope
and changes its name to:

CONSOLIDATED ALUMINUM CORPORATION

Effective September 1, 1960

Aluminum Foils, Inc. has outgrown its name.

The Company was established as a producer of high-quality aluminum foil, and has become one of the leaders in this field.

Further diversifying and integrating, the Company has added its own aluminum casting and sheet production installations, and is now a major supplier of sheet aluminum for the growing market demand. A further expansion increasing capacity in coiled sheet products—both in regular mill and specialty classifications—will be announced soon.

The Company is the largest producer of super purity aluminum (99.99% to 99.999% pure) in America. A recent plant expansion has tripled the capacity for producing this remarkable metal—now available in the most complete range of forms including pig, pellets, re-roll stock, coiled sheet and foil.

Consolidated Aluminum Corporation will represent the same service-minded personnel and quality production that friends and customers have known as Aluminum Foils, Inc.

For data on our products write:

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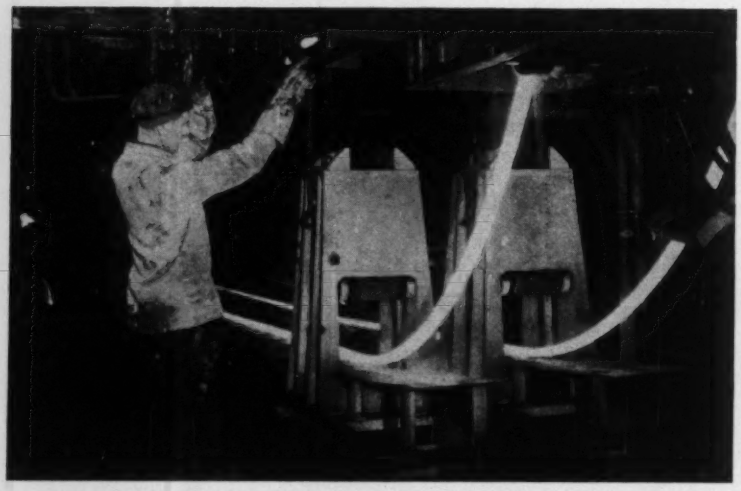
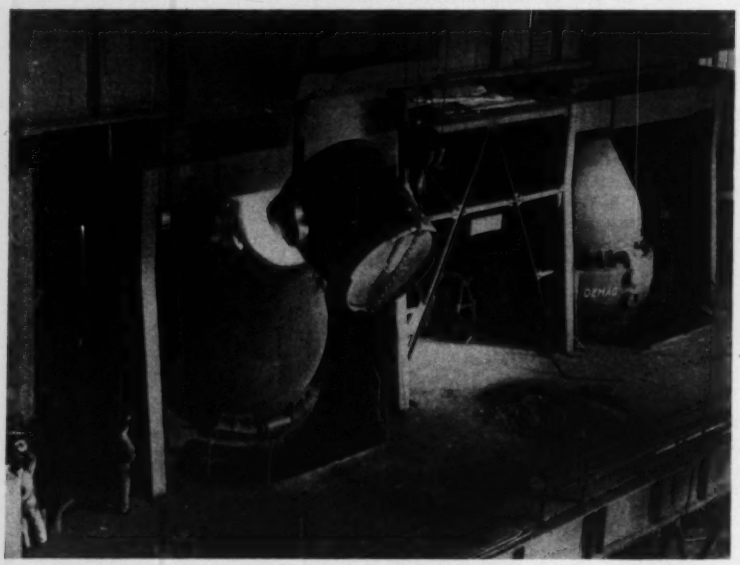
Our Steelmaking Shows The Foreign Touch



Operator adjusts movable rolls that bend descending billets as they leave a two strand, continuous casting machine at Barrow Steel Works Ltd., Barrow, England



Molten iron is charged into one of the 30 ton oxygen vessels at the Donawitz (Austria) Works of Oesterreichisch-Alpine Montangesellschaft

LOOK FOR steelmakers in Western Europe and Japan to step up their competition in world markets.

LOOK FOR the invasion of Western European processes and equipment to be stepped up.

You have to go beyond cheap labor to get the true picture. In some cases, their technology is better than ours in terms of operating efficiency.

Such progress puts foreign steelmakers in a position to de-emphasize price. They will start to talk more about quality because they have the up-to-date equipment needed to turn out first-class products.

• European companies are active in the world-wide sale of oxygen steelmaking processes.

Basic oxygen steelmaking, originated in Europe, is in universal use. The L-D process (named for Linz and Donawitz, the Austrian cities where it was first used commercially) is available through Kaiser Engineers Div., Henry J. Kaiser Co., Oakland, Calif. (Kaiser is licensor for the process in the U. S.)

The Stora-Kaldo process, developed in Sweden by Stora Kopparberg Berslags AB, is licensed in the U. S. through Dravo Corp., Pittsburgh. Dravo handles design, fabrication, and construction of the Stora-Kaldo facilities and has American rights to a sintering process developed in Germany by Lurgi Gesellschaft fur Chemie und Huttenwesen MBH, Frankfurt.

Another German company, Pintsch-Bamag AG, Cologne, has contracted to build two, 100 ton oxygen converters for H. K. Ferguson Co., Cleveland, a division of Morrison-Knudsen Co. The vessels will be used at the Pueblo, Colo., plant of Colorado Fuel & Iron Corp.

• Rights to other metallurgical processes and engineering services are available from foreign firms.

A full line of machines, processes, and services are offered by Demag AG, Duisburg, Germany, an international industrial heavyweight. The company furnishes steelmaking machinery and equipment, or com-

SLABBING-BLOOMING MILLS

Designed and Built by MESTA

Mesta 46" Reversing Slabbing-Blooming Mill, Tables and Manipulators

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MESTA MACHINE COMPANY

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plete, integrated steel plants. Demag recently completed an ore unloading facility for the Chesapeake & Ohio Railway Co. at Newport News, Va. The equipment takes ore from seagoing vessels at a rate of 3600 tons an hour.

Two, 150 ton, electric arc furnaces, of Demag design, will be installed by G. W. B. Furnaces Ltd., in the Rotherham and Templeborough (England) works of Steel, Peech & Tozer, a subsidiary of United Steel Companies Ltd. The furnaces are part of a five year, $25 million modernization program.

A vacuum treatment process for molten steel, developed in Germany by Dortmund-Horder Huetteunion AG, Dortmund, is marketed in this country by Lectromelt Furnace Div., McGraw-Edison Co., Pittsburgh. One of the DHHU installations, under construction at the Midland (Pa.) Works of Crucible Steel Co. of America, will treat 40 to 200 ton heats. Another, at National Forge Co., Irvine, Pa., will handle 10 to 60 ton batches of steel for forgings.

• Oxygen use in a variety of processes is on the upswing.

The popularity of L-D steelmaking in Europe isn't questioned. And the process is gaining ground in the United Kingdom. But variations of the method also look promising. In one, the French OLP (oxygen-lime powder) process, burned lime powder is blown into the bath with oxygen stream. Oxygen passes through the lance under relatively high pressure, as in the L-D process.

In the Stora-Kaldo process, oxygen is introduced above the bath at relatively low pressure, and the converter vessel rotates on a slanted axis. A Kaldo facility recently put into operation at Seremange, France, by Societe Lorraine de Lammage Continu, is turning out heats of 110 tons or more.

Another method, called the rotor process, features slow rotation of the converter vessel (maximum, 4 rpm). A 100 ton rotor furnace installation, built by Demag, went into operation recently at the Vanderbijlpark plant of South African Iron & Steel Industrial Corp. A similar setup is under construction at the company's Pretoria Works.

European steelmakers are also using oxygen lances in open hearth and electric furnaces. In some shops, hot metal is being treated with oxygen (to remove silicon and other impurities) before it is charged into steelmaking furnaces.

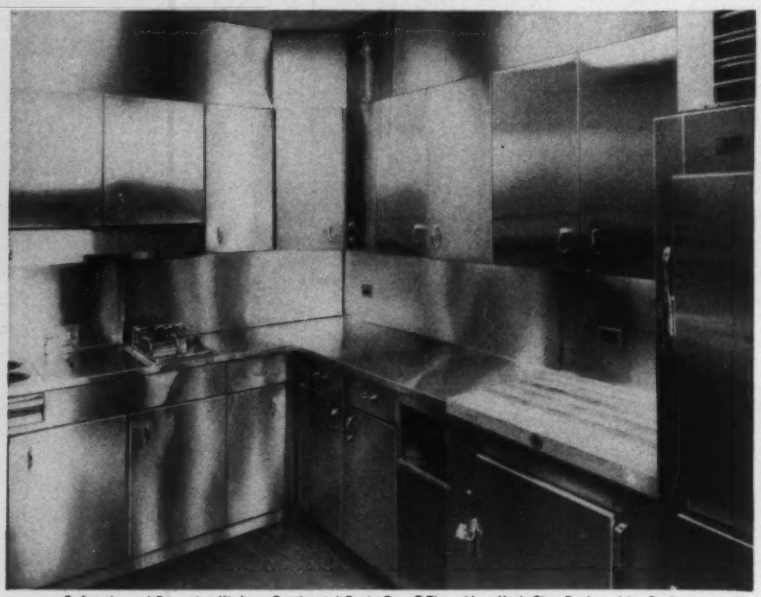
• Foreign steelmakers are alert for new and more practical ore reduction methods.

The shortage of coking coal in many European areas has encouraged use of electric smelting furnaces. The furnaces, obtained usually from a Norwegian firm, Elektrokemisk, Oslo, or from Demag, in Germany, have been adopted in countries where raw material and market conditions make them practical. Example: In Japan, the only domestic ore is beach sand containing titaniferous magnetite. It is difficult to smelt in blast furnaces but is said to refine easily in the electrics.

But the so-called direct reduction processes also get their share of attention; some are in pilot operation in Europe.

Stora Kopparberg has been a leader in the direct reduction field. It was instrumental in the practical development of the Wiberg-Soderfors process, in which reducing gas

"All exposed and unexposed surfaces shall be of STAINLESS STEEL..."



Cafeteria and Executive Kitchen, *Continental Grain Co.*, Offices: New York City. Designed by *Designs for Business, Inc.*, New York, N. Y. Fabricated by *Stainless Food Equipment Co.*, Newark, N. J. Installed by *Ben Mernit*, New York City

■ The specifications for this executive cafeteria called for all kitchen metal surfaces, both exposed *and* unexposed, to be constructed of stainless steel. Only *lifetime* stainless steel can offer the durability and ease of maintenance necessary for maximum sanitation in food handling.

■ MICROROLD STAINLESS STEEL was chosen for its consistent uniformity of gauge, outstanding finish and well-known fabricating qualities.

■ *Why not investigate the advantages of stainless steel for your next project?*

WASHINGTON STEEL CORPORATION
91-O WOODLAND AVENUE • WASHINGTON, PENNSYLVANIA

passes upward through a shaft containing iron ore and carbon (charcoal or coke). Another process, developed at Domnarvet by Bo Kalling, produces sponge iron in a rotary kiln that contains ore and coke. Also under development: The Stelling process, which reduces ore with carbon monoxide, in a fluidized bed.

In Germany, development work is still being done on the Krupp-Renn (rotary furnace) process. And at the University of Ghent, Belgium, a 1 ton electric induction furnace, for direct ore reduction, is under study.

• Continuous casting is catching on overseas.

Installations in operation: Three each in Austria and France; two each in West Germany, Italy, Sweden, and the United Kingdom; one in Japan, and one in East Germany (another is planned in Japan).

In the USSR, five continuous casting plants are in use, and two more are in the works (including a facility that will produce about 2 million tons of killed and rimming low carbon steels a year).

Also on the way: Plants in Norway, Spain, and Switzerland.

The process produces one or more continuous strands of steel that can be cut into billets. It bypasses the teeming, stripping, and soaking of ingots, and several rolling operations.

Molten metal is poured from the casting ladle, through a tundish, water cooled molds, and cooling chambers. Withdrawal rolls pull the partially frozen metal downward.

In some systems, like the one built by Demag for Societa per l'Industria e l'Elettricita, Terni, Italy, the strands are cut as they descend, and lengths are tilted for loading on horizontal rollers. The installation at an English firm, Barrow Steel Works Ltd., includes bending equipment that lays the uncut strands on horizontal rollers. They are later cut to length.

• Steelmen overseas are also keeping up to date in nondestructive testing.

A German company, Phoenix-Rheinrohr AG, Dusseldorf, is using a betatron, an x-ray image intensifier, and a television system to detect pipes and cavities in hot, semifinished steel while it is in the mill.

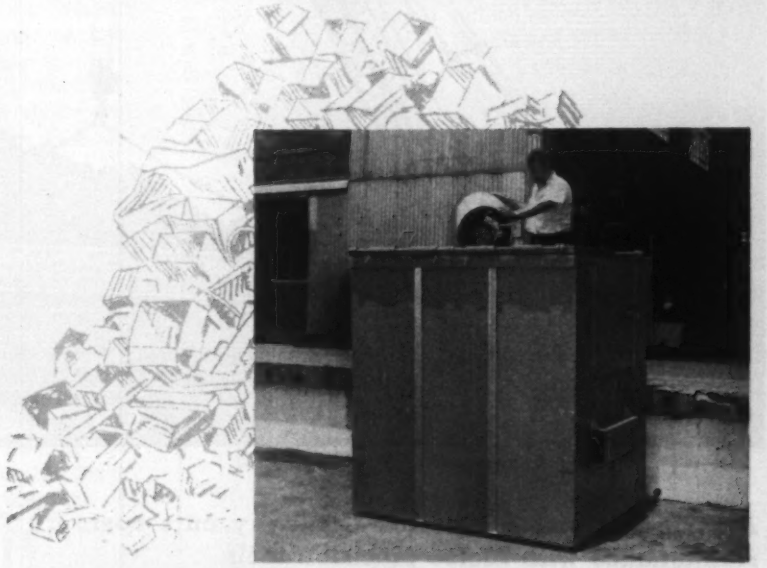
The system checks blooms 4 to 12 in. square at speeds up to 40 ft a minute.

• Constant research and development are increasing productivity in conventional facilities.

A modern technical center was opened recently by August Thyssen-Huette AG, Duisburg, Germany. The company is eager to accelerate technological innovations in steelmaking. It must operate at top efficiency to compete with firms in other countries that have a more favorable raw material supply and modern production facilities to match those in Germany, says Alfred Michel, AT-H's technical vice president.

Research has helped AT-H reduce manhour requirements per ton of crude steel from 13 (before World War II) to eight. In that same period, the coke rate in the German steel industry has fallen from about 2200 lb per net ton of pig iron to about 1700. And AT-H's newest stack consumes only about 1400 lb of coke per ton of hot metal.

NOW! You Can End Refuse Storage Problems...WITHOUT Capital Outlay



DUMPMASTER-Equipped Private Haulers Provide Containers and Efficient Service

If you're plagued with trash piles, scattered refuse, fire hazards, and hit-or-miss collection, there's a good chance you can do something about it . . . WITHOUT CAPITAL OUTLAY!

In most major cities DEMPSTER-DUMPMASTER-equipped private haulers will put clean, big-capacity storage containers at convenient locations in your plant . . . empty them mechanically on schedule, or on a call-in basis . . . all for a reasonable monthly fee.

When you containerize your refuse, plant housekeeping becomes easy, employee morale goes up.

Write today for the name of your nearest private hauler. We'll also send literature describing his service.

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DEMPSTER BROTHERS Inc.

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MORSE TOOLS HELP AMERICAN KEEP QUALITY... PRECISION

American Hoist & Derrick Company cuts cost... maintenance with Morse precision tools

For years economy of operation and low maintenance has been an outstanding feature at American.

So it follows they use Morse Tools during manufacture... because it takes top-quality, tough tools to build rugged machines. It takes Morse Cutting Tools... the best known quality tools on the market ... for smoother, faster machining and longer tool life.

For your cutting tool needs, it will pay you to order "Morse". Call your Morse Franchised Distributor today.

Morse means more production... smoother, more accurate production . . . with every type of cutting tool from drills, reamers, taps and dies, to end mills, milling cutters, slitting saws and "specials". So, if you want the best from every cutting tool you buy, mark your order "MORSE". For if you want *Morse Quality,* there's only one way to get it... *specify Morse.*

MORSE

means "THE MOST" in Cutting Tools

MORSE TWIST DRILL & MACHINE CO., NEW BEDFORD, MASSACHUSETTS

Warehouses in: NEW YORK • CHICAGO • DETROIT • DALLAS • SAN FRANCISCO

VN

A Division of VAN NORMAN INDUSTRIES, INC.

Fourth Quarter Forecast: 70%

STEELMAKERS are writing September off as another poor month and looking ahead to October.

Despite the end of vacations at many metalworking plants, there's little life in the market. Incoming orders for September are fluctuating inconclusively and are only slightly larger in the aggregate than they were for August. In Chicago, sales executives don't know what to make of the situation. Although daily entries are picking up, some September tonnage is being pushed back to October. Some mills think September may not be as good a production month as August. Reason: They're not getting as large a volume of late orders as they were a short time ago.

The only good news comes from the East and Detroit, where automobile orders for sheets are increasing steadily. Requirements for October will be the largest in many months. There's speculation that 1.5 million cars will be built in the fourth quarter.

OUTLOOK UNCERTAIN—Because order backlogs at the mills are so small, it's almost impossible for steelmakers to forecast production. But barring a sudden influx of orders, most observers predict that September operations will average between 57 and 60 per cent of capacity (vs. 54 per cent in August). Last week, partly because of the continued railroad strike at the Pittsburgh plants of U. S. Steel Corp., the ingot rate slipped half a point to 53.8 per cent of capacity. Production was about 1,533,000 ingot tons.

UPTURN IN OCTOBER— Industry spokesmen are unanimous in predicting an upturn next month, but there's no talk of a boom. Roger M. Blough, chairman of U. S. Steel Corp., expects a pickup in steel buying "soon," with production rising gradually to 70 per cent of capacity. F. A. McClelland, vice president of Wheeling Steel Corp., forecasts a "modest recovery" in the fourth quarter. Joseph L. Block, chairman of Inland Steel Corp., sees a pickup in October but cautions that it won't be startling. The peak rate for the fourth quarter will be in the seventies, he believes.

107 MILLION TONS— Assuming that industry operations average 57 per cent of capacity this month and 70 per cent in the final quarter, the year's output will be 107 million ingot tons—up 15 per cent from last year's strike-curtailed production but a far cry from 1960 forecasts (up to 135 million tons). Inland's Mr. Block blames the disappointing year on high steel inventories, liquidation of steel on hand to cut bank borrowing, and failure of heavy durable goods industries to do as well as expected.

INVENTORIES NEAR BOTTOM—At the start of the year, consumer steel inventories were believed to have been about 13.5 million tons. They increased rapidly during the first quarter and hit a peak of 18.5 million tons by the end of April. After a slight drop in May, they started falling sharply—by more than 1 million tons a month in June, July, and August. By the end of August, they were down to the Jan. 1 level again but still above the low point of last year's strike: About 10 million tons. This month, stocks will continue to drop—probably by at least 1 million tons. Market analysts expect liquidation to end soon, but they're no longer sure what the "minimum" level is. Many consumers have apparently decided to carry smaller stocks than ever before—pushing the warehousing function back to the mills. Because of fast deliveries that mills can provide, yesterday's "minimum" of 10 million tons may now be more than adequate.

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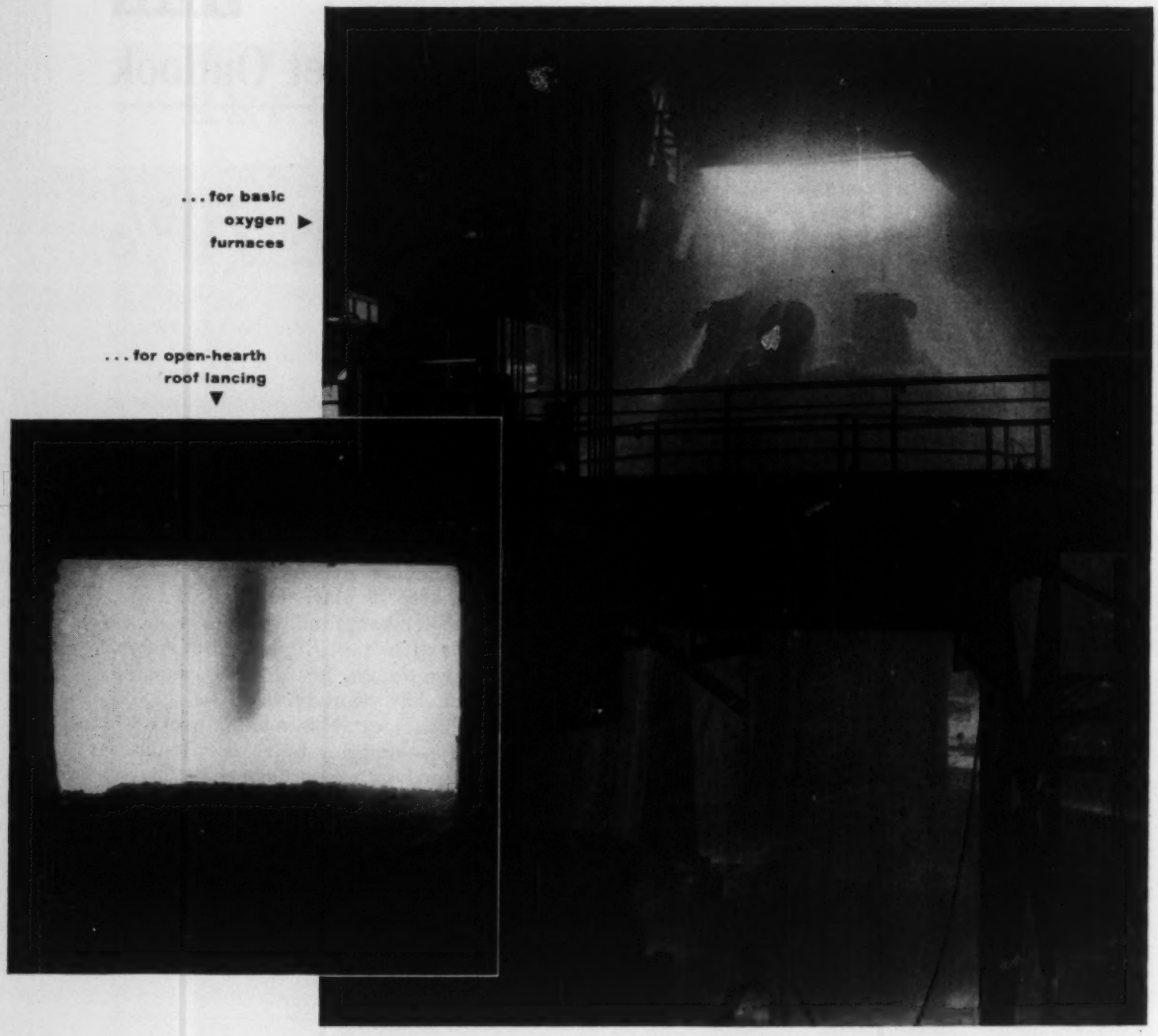
*Current prices were published in the Aug. 29 issue and will appear in subsequent issues.

...for basic oxygen furnaces ▶

...for open-hearth roof lancing ▼



AGAIN! Jones & Laughlin calls on Air Products for reliable, low-cost oxygen

Two new Air Products on-site plants will soon supply Jones & Laughlin Steel Corporation with an added 840 tons per day of high purity oxygen. At the company's Cleveland Works, a 500 tons per day plant will serve basic oxygen furnaces—a process already in use by J & L at its Aliquippa Works, where a 230 tons per day Air Products plant has been supplying oxygen for over three years. At the Pittsburgh Works, a new 340 tons per day plant will supplement an existing 100 tons per day plant to enable J & L to fully convert open hearths to the oxygen roof lancing technique. Both plants will be built, owned and operated by Air Products.

As in the past, Air Products is building reliability of on-site supply into the plants at both locations, in that oxygen will be produced in gaseous and liquid forms. The liquid oxygen is stored in specially-designed tanks for use during shut-down or high consumption periods, reducing dependence on hauled-in supply. If experimental steel-making techniques increase oxygen demands beyond on-site capabilities—as in the case of Aliquippa—Air Products can offer supplemental oxygen on a hauled-in basis during such periods.

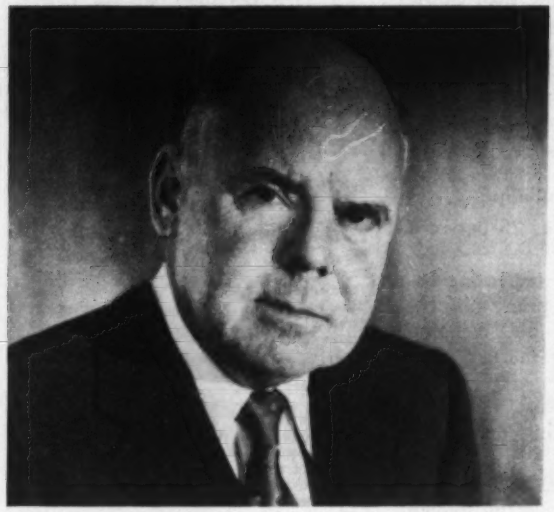
Steelmakers across the country are taking advantage of over twenty years of Air Products experience with on-site oxygen . . . plus continuous application research by our technical service department. Write or call for a down-to-earth discussion of your requirements. Air Products, Inc., Allentown, Pa. Phone EX 5-3311.

Air Products ...INCORPORATED

FIGHT FOR SURVIVAL

Pinch is being felt in domestic markets for tool and stainless steels, two steel executives tell U. S. Tariff Commission

'Our Rising Steel Imports: Threat to U.S.'



JAMES P. GILL

WILLIAM B. PIERCE

RISING IMPORTS of tool steel and stainless steel into the U.S. are threatening to export American jobs and imperil our national security.

That's what the U. S. Tariff Commission was told by James P. Gill, chairman and president of Vanadium-Alloys Steel Co., Latrobe, Pa., and William B. Pierce, vice president in charge of sales, Allegheny Ludlum Steel Corp., Pittsburgh. They were spokesmen for the U. S. Tool & Fine Wire Industry.

Both Mr. Gill and Mr. Pierce said that foreign producers, with their lower labor costs, are able to sell their steels in this country at prices U.S. companies cannot meet.

Both emphasized that their segments of the steel industry are essential to the defense of this nation.

In more detail, here is what they said:

MR. GILL—

In citing a sharp rise in tool steel imports the last two years, Mr. Gill warned that "any further reduction in the tariff rates on tool steel would threaten serious injury to the domestic economy."

Imports of two major classes of alloyed bars in the first four months of 1960 were 4.6 million lb, which on an annual basis would total around 13 million lb, Mr. Gill stated. In 1959, they amounted to 6.5 million lb—slightly more than double the 1958 total of 3 million lb.

Last year's large increase was not due to the steel strike, Mr. Gill asserted. Most of the U. S. tool steel industry was not struck, and U. S. producers had ample stocks of tool steel in warehouses last year, he recalled.

The jump in the first four months this year occurred while tonnage steel imports were declining.

As a further indication of the trend toward increased tool steel imports, Mr. Gill cited statistics on alloy content to more positively indicate the types of steels being brought in. He compared the dutiable amounts of vanadium, tungsten, and molybdenum. All three are used chiefly in tool steel.

In the first four months of this year, the 4.6 million lb of imported steel bars contained 20,000 lb of dutiable vanadium, 65,000 lb of tungsten, and 54,700 lb of molybdenum.

In 1959, the 6.5 million lb of alloyed bars contained 25,100 lb of dutiable vanadium, 81,000 lb of tungsten, and 73,800 lb of molybdenum.

Comparable figures for 1958 were

(in thousands of pounds): 7.0 vanadium, 21.3 tungsten, and 17.6 molybdenum.

In 1959, the alloys chiefly used in tool steel increased nearly four times over the 1958 mark, while imports of the steel, under broader classifications, were little more than double, Mr. Gill pointed out. It is apparent from the statistics, Mr. Gill said, that imports of tool steel bars have increased greatly and are still increasing.

Then he cautioned those responsible for our tariff policy to "recognize the importance of maintaining within our own borders a strong tool steel industry."

Mr. Gill attributed the growth in tool steel imports to foreign producers' advantage of lower labor costs. They are able to sell their steels in this country at prices U. S. companies cannot meet, Mr. Gill said.

"While costs of items such as scrap and power are somewhat similar here and abroad, the real difference lies in labor costs," Mr. Gill declared. The labor factor is especially important to tool and fine steel producers, he explained, "because it takes a great deal more labor to make a ton of tool steel than a ton of average steel produced on a high tonnage basis."

Canada was listed as the only foreign country whose tool steel industry paid hourly wages even approaching ours.

And U. S. companies have little or no advantage over foreign competition in productivity, Mr. Gill added.

Most Canadian and European mills also have fine, modern equipment and production methods, he commented.

MR. PIERCE—

Fear of a further increase in imports of stainless steel led Mr. Pierce to urge the U. S. Tariff Commission not to recommend a reduction in present tariffs on stainless and special steels.

Mr. Pierce noted that stainless steel imports have been growing rapidly in recent years and pointed out that the growth came while foreign steel mills have been operating at capacity to supply demand in their own and neighboring countries.

Imports, he estimated, are at an annual rate of 13,400 product tons, or approximately 2 per cent of stainless output in the U. S.

Mr. Pierce conceded that the present rate of stainless imports imposes no hardship on U. S. producers, but the situation, he said, could change rapidly once European mills are able to satisfy their own markets and have capacity to spare. "We feel that these imports are only an indication of what will happen when the stainless steel shortage in Europe is brought to an end either by reduction of the present demand or by the increase of European steelmaking facilities."

Imported stainless is being sold in the U. S. at prices averaging 15 per cent below ours.

Some quotations, Mr. Pierce revealed, are as much as 25 per cent below.

Imports have been increasing because of the lower price, not because the importers are "bringing anything new to our market," Mr. Pierce declared.

Most imports consist of staple items, long made in this country, he added.

Wage and tax rates, lower abroad than in the U. S., give the foreign producers an advantage, Mr. Pierce asserted.

While the average U. S. steelworker is more productive in making stainless steel than his counterpart in Europe or Japan, he would have to be three or four times more productive to offset the wage differential, Mr. Pierce testified.

Although stainless steel constitutes only about 1 per cent (by weight) of total steel production in the U. S., the special equipment and skills of the stainless producers are essential to the nation's defense, he declared.

A large percentage of stainless steel, still under U. S. government controls as a strategic material, is used in aircraft and missiles, he observed. More than two-thirds of the country's steel vacuum melting capacity, used for making the finest and most critical steels, is in stainless steel plants.

In addition to the 16 companies for which he spoke, 40 other producers are concerned. They are the redrawers of tubing and wire and rerollers of strip. Their major sources of supply, Mr. Pierce explained, are U. S. producers of stainless steel.

Shipments of Stainless Steel Decline in June

Mill shipments of stainless and heat resisting steel products in June (including exports and tonnage for conversion into further finished products) totaled 51,307 net tons, reports the American Iron & Steel Institute. The total compares with 52,270 tons moved in May, 1960, and with 101,187 tons shipped in June, 1959.

The total movement for the first six months of this year was 397,839 tons vs. 467,816 in the like period a year ago.

Breakdown of shipments by products:

Stainless Steel Shipments*
(Net tons)

Products	June, 1960	Six Months
Ingots	2,117	13,212
Blooms, etc.	3,104	19,486
Tube rounds	14	1,131
Wire rods	535	6,421
Structurals	19	65
Plates	3,298	21,368
Bars—hot rolled	3,127	21,894
Bars—cold finished	3,854	29,639
Mechanical tubing	374	3,381
Pressure tubing	915	5,985
Drawn wire	1,667	14,279
Sheets—hot rolled	4,708	47,425
Sheets—cold rolled	11,104	79,732
Strip—hot rolled	1,996	20,744
Strip—cold rolled	13,113	105,304
All other	.....	4
Total stainless	49,945	390,070

Heat Resisting Steel Shipments

Products	June, 1960	Six Months
Blooms, etc.	93	631
Tube rounds	136	801
Plates	79	665
Bars—hot rolled	396	1,777
Bars—cold finished	6	374
Pressure tubing	534	2,745
All other	118	776
Total heat resisting	1,362	7,769
Total stainless and heat resisting	51,307	397,839

*Including exports and shipments to members of the industry for conversion into further finished products or resale.
Data from American Iron & Steel Institute.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 105 & 106

Automotive requirements for sheets are picking up, providing a little encouragement in an otherwise featureless market. It's expected peak auto buying will not be attained until late October. Steel service centers are also specifying a little more freely, and sellers anticipate an early revival in demand from the appliance makers.

Over-all, the market continues dull, and shipment promises are unchanged. Hot rolled sheets can be had within two weeks, cold rolled in two to three weeks (if bands are available), and galvanized around five weeks.

Mahoning Valley Steel Co., Niles,

Ohio, one of the last hand sheet mills, ends all sheetmaking operations within 90 days. The company, a division of General Electric Co., will continue to operate its conduit and tube department. The sheet mill was built in 1916, and has been mechanized and otherwise modernized since.

Steel Exports, Imports Rise in First Half

June exports of iron and steel products (all grades and classifications) totaled 414,403 net tons, valued at $86,613,048, reports the U. S. Department of Commerce. The month's movement brought total exports for the first six months of the year to 1,668,331 tons, valued at $379,659,482.

Exports in June and the first six months registered gains over the year ago periods. The June, 1959, total was 253,723 tons, valued at $57,684,155, while the six months' total was 1,395,200 tons, valued at $322,519,439.

In June, steel imports totaled 299,291 tons, valued at $40,502,734 tons, down sharply from the 514,357 tons, valued at $57,193,325, brought in during the like month last year. But imports in the first six months were ahead of the 1959 pace: 2,534,756 tons, valued at $356,965,772, vs. 2,292,800 tons, valued at $259,143,660.

Scrap Steel Exports Up Sharply This Year

Exports of iron and steel scrap totaled 606,112 net tons, valued at $20,331,184 in June, reports the U. S. Department of Commerce. The total compares with 407,957 tons, valued at $13,389,761 exported in June, 1959.

The total for the first six months was 3,148,339 tons, valued at $106,168,625. That compares with 1,898,029 tons, valued at $62,028,699 in the same period last year.

Imports in June amounted to 17,472 tons, valued at $609,139. The total compares with 35,194 tons, valued at $1,318,719 brought into the country in June, 1959. The six months' total was 94,480 tons, valued at $3,601,297, against 153,424 tons, valued at $5,780,747 in the same period last year.

Iron Ore . . .

Iron Ore Prices, Page 112

U. S. Steel's new iron ore development in northeastern Quebec will start shipping high grade iron concentrate by mid-1961, says Roger Blough, chairman. The project, costing more than $200 million, will have a capacity of about 8 million tons of ore concentrate annually.

Iron Ore Co. of Canada is building a plant at Carol Lake, east of the U. S. Steel facility, to produce up to 8 million tons of concentrate annually. Wabush Iron Co. (owned 40 per cent by Youngstown Sheet & Tube Co.) is building a 5 million ton concentrating plant at Wabush Lake, adjacent the Carol Lake project.

U. S. Steel will ship some of its concentrate to inland plants via the St. Lawrence Seaway. Some will be sold in Europe. Whether the corporation's Pittsburgh Steamship Div. will move the ore into the Great Lakes has not been determined. Currently, most of the ore from Seven Islands, Que., is moved by Canadian and British ships.

Mr. Blough has denied as unfounded reports that U. S. Steel would like to get out of the ore business in Venezuela.

Tin Plate . . .

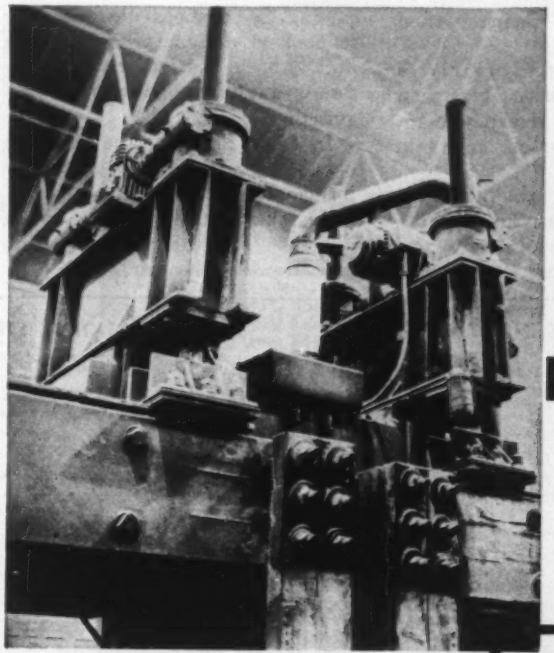
Tin Plate Prices, Page 106

Tin can shipments in June totaled 424,414 tons vs. 407,800 in May and 444,950 in June 1959. In the first six months, the movement was 2,113,999 tons, against 2,191,354 in the same 1959 period.

During June, 1791 tons of aluminum cans were shipped vs. 1713 in May.

Tin cans for fruit and fruit juices totaled 54,621 tons in June vs. 58,291 in May. Vegetable and vegetable juice cans amounted to 56,237 tons in the month, against 46,890 in May. The cumulative total for the first six months: Fruit and fruit juice cans, 291,951 tons; vegetable and vegetable juice cans, 229,055 tons.

Shipments of beer cans in June were 99,934 tons vs. 88,354 in May and 96,215 in June, 1959. The total for the first six months: 415,134



100 million pounds per year

That's how much aluminum a modern reduction plant equipped with 1000 Cone-Drive **double-enveloping worm** gearmotors produces. Gearmotors control anodes and casings on the electric furnaces. Ambient temperatures to 300° F and constant reversing are encountered.

Versatile Cone-Drive gearing is available in gearsets, speed reducers and gearmotors.

CONE-DRIVE GEARS

DIVISION MICHIGAN TOOL CO.
7171 E. McNichols Rd., Detroit 12

tons vs. 423,133 in the same period of 1959.

With completion of its new No. 3 electrolytic tin line at its Indiana Harbor Works, Inland Steel Co. last week experimentally produced coiled tin plate and shipped it to customers for the first time. It is now converting its No. 2 tin line to coiled plate production. The work will be completed next summer.

The new facilities add 165,000 tons of tin plate capacity, bringing the mill's annual capacity to 435,000 tons.

Steel Inventory Picture Improving, Says Blough

Early improvement in the steel inventory picture, with consumption and production balancing out at about 70 per cent of capacity, was predicted last week by Roger Blough, chairman, U. S. Steel Corp., in an interview with STEEL.

He said consumers' inventories last December totaled 12 million tons, rose to 17 or 18 million by May, and are now estimated at 13 or 14 million.

The industry leader feels the U. S. steel industry can meet the threat of foreign steel, so long as it isn't priced out by inflation brought on by excessive wage demands and other cost problems.

He added that the industry is waging an aggressive campaign through stepped-up research to retain its present markets and gain new ones.

The corporation chairman reported a good upturn in pipe demand has been noted lately, and it may stimulate other steel buying. He attributed the improvement in pipe to recent approval of a number of big pipeline projects by the Federal Power Commission.

Plates . . .

Plate Prices, Page 104

Plate fabricating shops are operating as low as 30 to 40 per cent of capacity. Demand is sluggish, and no substantial improvement is in immediate prospect.

Consumers of sheared plates have no difficulty in obtaining shipments from the mills within ten days to two weeks.

Wire . . .

Wire Prices, Pages 106 & 109

Sluggish demand for the various wire products continues, but producers are hoping for a seasonal pickup in buying as the month advances. Manufacturers' wire is available for shipment in two to three weeks. Merchant wire items can be had from stock.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 105

Backlogs of concrete reinforcing bars are heavier, but are unevenly distributed among distributor-fabricators. Some shops are unwilling to book at current prices, and the bulk of business is going to distributors operating on lower profit margins than normal.

In New England, the price for bars in place is unchanged, averaging close to 12.00 cents per pound, and somewhat lower on bridge volume. Tonnage required for the bridgework is heavier.

Ferroalloys . . .

Ferroalloy Prices, Page ...

Vanadium Corp. of America, New York, announced price changes on the several grades of low carbon ferrochromium, low carbon ferrochrome-silicon, and exothermic ferrochromium, effective Aug. 22.

The company also announced a new grade of low carbon ferrochromium with intermediate silicon, which consolidates several similar grades previously furnished. The analysis of this new grade will be: Chromium, 65-71 per cent, silicon, 1.00-2.00 per cent, carbon, 0.03-0.05 per cent. It is priced at $0.3350 per pound of chromium contained in bulk, carload lots, lump size, f.o.b. shipping point, with freight allowed.

The base prices for other products affected are:

LOW CARBON FERROCHROMIUM:

Exlo "75"—Max 0.015% carbon	$0.3650
Exlo —Max 0.025% carbon	0.3500
Exlo —Max 0.05% carbon	0.3400
Max 0.10% carbon	0.3375
Max 0.20% carbon	0.3350
Max 0.50% carbon	0.3325
Max 1.00% carbon	0.3300
Max 1.50% carbon	0.3275
Max 2.00% carbon	0.3250

LOW CARBON FERROCHROME-SILICON:

34-46	
Cr	0.2450
Si	0.1460
40-42	
Cr	0.2450
Si	0.1460
55-25	
Cr	0.3050
Si	0.1460
57-15	
Cr	0.3200
Si	0.1460
60-10	
Cr	0.3250
Si	0.1460

MEDIUM CARBON FERROCHROME-SILICON (49-28)

$0.3450 per lb ctd Cr.

EXOTHERMIC FERROCHROMIUM ALLOYS:

Thermokrom 4	Cr $0.3000
Thermokrom 6	Cr 0.2900
Thermokrom 8	Cr 0.2800
Thermokrom-811	Cr 0.4200

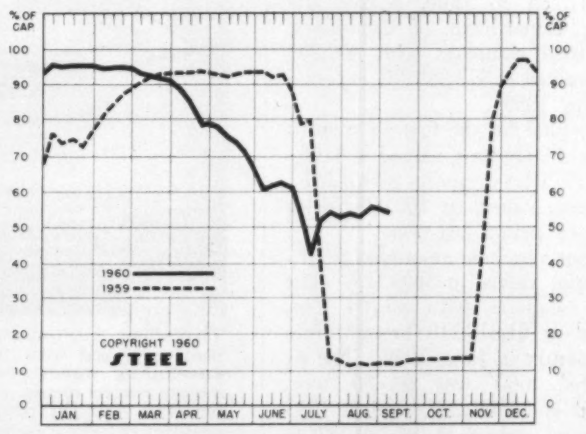
DISTRICT INGOT RATES

(Percentage of capacity utilized)

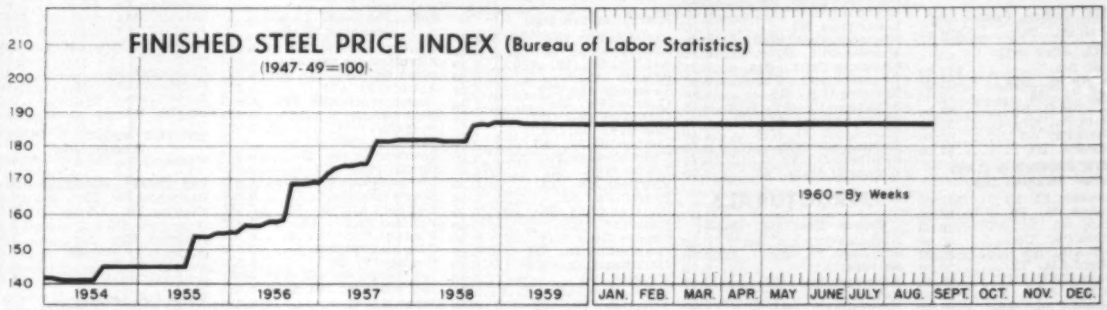
	Week Ended Sept. 4	Week Ago	Month Ago	Year Ago
Northeastern	56	60	58	*
Buffalo	58	58	56	*
Pittsburgh	45	45	49	*
Youngstown	44	45	47	*
Cleveland	53	50	46	*
Detroit	71	75	78	*
Chicago	60	58	56	*
Cincinnati	60	60	55	*
St. Louis	73	70	54	*
Southern	61	60	61	*
Western	51	53	48	*
Total Industry	53.8	54.3	53.9	11.7
Index (1947-49=100)	95.4	96.3	95.7	20.7
Net Tons (In thousands)	1,533	1,547	1,537	332

Current week's figures are preliminary. Weekly capacity (net tons): 2,849,306 in 1960 and 2,831,331 in 1959. Source: American Iron & Steel Institute. *Not available due to general strike.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Aug. 30, 1960	Week Ago	Month Ago	July Index	Year Ago
186.2	186.2	186.2	186.2	186.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Aug. 30

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, H.R., Carbon	6.675
Rails, Light, 40 lb	7.292	Bars, Reinforcing	6.335
Tie Plates	6.875	Bars, C.F., Carbon	10.710
Axles, Railway	10.175	Bars, C.F., Alloy	14.125
Wheels, Freight Car, 33 in. (per wheel)	62.000	Bars, C.F., Stainless, 302 (lb)	0.570
Plates, Carbon	6.350	Sheets, H.R., Carbon	6.350
Structural Shapes	6.167	Sheets, C.R., Carbon	7.300
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, Galvanized	8.775
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, C.R., Stainless, 302 (lb)	0.658
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Sheets, Electrical	12.625
Bars, Tool Steel, H.R. Alloys, High Speed, W18 Cr 4, V 1 (lb)	1.895	Strip, C.R., Carbon	9.489
Bars, H.R., Alloy	10.775	Strip, C.R., Stainless, 430 (lb)	0.480
Bars, H.R., Stainless, 308 (lb)	0.543	Strip, H.R., Carbon	6.250
		Pipe, Black, Buttweld (100 ft)	19.495
		Pipe, Galv., Buttweld (100 ft)	23.098
		Pipe, Line (100 ft)	195.430
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
		Tubes, Boiler (100 ft)	51.200
		Tubing, Mechanical, Carbon (100 ft)	27.005
		Tubing, Mechanical, Stainless, 304 (100 ft)	195.395
		Tin plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800
		Black Plate, Canmaking Quality (95 lb base box)	7.900
		Wire, Drawn, Carbon	10.575
		Wire, Drawn, Stainless, 430 (lb)	0.665
		Bale Ties (bundles)	7.647
		Nails, Wire, 8d Common	9.433
		Wire, Barbed (80-rod spool)	8.414
		Woven Wire Fence (20-rod roll)	21.003

STEEL's FINISHED STEEL PRICE INDEX

	Aug. 31 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	247.82	207.63
Index in cents per lb	6.713	6.713	6.713	6.713	5.625

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT	$149.96	$149.96	$149.96	$149.96	$127.41
No. 2 Fdry, Pig Iron, GT.	66.49	66.49	66.49	66.49	58.99
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	58.49
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	59.77
Steelmaking Scrap, GT	32.67	32.67	32.00	39.00	43.83

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Aug. 31 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.675	4.65
Bars, H.R., Chicago	5.675	5.675	5.675	5.675	4.65
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.975	4.90
Bars, C.R., Pittsburgh	7.65*	7.65*	7.65*	7.65*	5.90
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.50	4.60
Shapes, Std., Chicago	5.50	5.50	5.50	5.50	4.60
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.77	4.88
Plates, Pittsburgh	5.30	5.30	5.30	5.30	4.50
Plates, Chicago	5.30	5.30	5.30	5.30	4.50
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.30	4.50
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.30	4.50
Plates, Claymont, Del.	5.30	5.30	5.30	5.30	4.50
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	5.10	4.325
Sheets, H.R., Chicago	5.10	5.10	5.10	5.10	4.325
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.275	5.325
Sheets, C.R., Chicago	6.275	6.275	6.275	6.275	5.325
Sheets, C.R., Detroit	6.275	6.275	6.275	6.275 5.325-5.425	
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.875	5.85
Strip, H.R., Pittsburgh	5.10	5.10	5.10	5.10	4.325
Strip, H.R., Chicago	5.10	5.10	5.10	5.10	4.325
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.425	6.317
Strip, C.R., Chicago	7.425	7.425	7.425	7.425 6.35-6.45	
Strip, C.R., Detroit	7.425	7.425	7.425	7.425	6.35
Wire, Basic, Pittsburgh	8.00	8.00	8.00	8.00	6.25
Nails, Wire, nonstock, Pitts.	8.95	8.95	8.95	8.95	7.60
Tin plate (1.50 lb) box, Pitts.	$10.65	$10.65	$10.65	$10.65	$9.05

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$99.50	$84.50
Wire rods, 7/32-9/16" Pitts.	6.40	6.40	6.40	6.40	5.025

PIG IRON, Gross Ton	Aug. 31 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pittsburgh	$67.00	$67.00	$67.00	$67.00	$59.50
Basic, Valley	66.00	66.00	66.00	66.00	58.50
Basic, deld., Philadelphia	70.41	70.41	70.41	70.41	56.16
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	66.50	59.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	59.00
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	59.66
No. 2 Fdry, Birmingham	62.50	62.50	62.50	62.50	55.00
No. 2 Fdry (Birm.), deld., Cin.	70.20	70.20	70.20	70.28	62.70
Malleable, Valley	66.50	66.50	66.50	66.50	59.00
Malleable, Chicago	66.50	66.50	66.50	66.50	59.00
Ferromanganese, net tons†	245.00	245.00	245.00	245.00	190.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$31.50	$31.50	$30.50	$38.50	$43.00
No. 1 Heavy Melt, E. Pa.	35.00	35.00	34.00	40.00	46.50
No. 1 Heavy Melt, Chicago	31.50	31.50	31.50	38.50	42.00
No. 1 Heavy Melt, Valley	33.50	33.50	33.50	41.50	46.50
No. 1 Heavy Melt, Cleve.	31.50	31.50	31.50	38.50	44.00
No. 1 Heavy Melt, Buffalo	29.50	29.50	29.50	33.50	39.50
Rails, Rerolling, Chicago	53.50	53.50	52.50	61.50	64.50
No. 1 Cast, Chicago	41.50	42.50	42.50	53.50	46.50

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.00	$15.00	$15.00	$15.00	$13.625
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.50
Oven, Fdry., Milwaukee	32.00	32.00	32.00	32.00	26.25

Steel Prices

Mill prices as reported to STEEL, Aug. 31, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers, page 105; footnotes, page 109.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 ....$76.00

INGOTS, Alloy (NT)

Detroit S41 ....$82.00
Economy,Pa. B14 ....82.00
Farrell,Pa. S3 ....82.00
Lowellville,O. S3 ....82.00
Midland,Pa. C18 ....82.00
Munhall,Pa. U5 ....82.00
Sharon,Pa. S3 ....82.00

BILLETS, BLOOMS & SLABS Carbon Rerolling (NT)

Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 ....80.00
Buffalo R2 ....80.00
Clairton,Pa. U5 ....80.00
Ensley,Ala. T2 ....80.00
Fairfield,Ala. T2 ....80.00
Fontana,Calif. K1 ....90.50
Gary,Ind. U5 ....80.00
Johnstown,Pa. B2 ....80.00
Lackawanna,N.Y. B2 ....80.00
Munhall,Pa. U5 ....80.00
Owensboro,Ky. G8 ....80.00
S.Chicago,Ill. R2, U5 ....80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 ....80.00
Youngstown R2 ....80.00

Carbon, Forging (NT)

Bessemer,Pa. U5 ....$99.50
Buffalo R2 ....99.50
Canton,O. R2 ....102.00
Clairton,Pa. U5 ....99.50
Conshohocken,Pa. A3 ..104.50
Ensley,Ala. T2 ....99.50
Fairfield,Ala. T2 ....99.50
Farrell,Pa. S3 ....99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 ....99.50
Geneva,Utah C11 ....99.50
Houston S5 ....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2 ..99.50
LosAngeles B3 ....109.00
Midland,Pa. C18 ....99.50
Munhall,Pa. U5 ....99.50
Owensboro,Ky. G8 ....99.50
Seattle B3 ....109.00
Sharon,Pa. S3 ....99.50
S.Chicago R2, U5, W14..99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ....109.00
Warren,O. C17 ....99.50

Alloy, Forging (NT)

Bethlehem,Pa. B2 ...$119.00
Bridgeport,Conn. C32..119.00
Buffalo R2 ....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3 .126.00
Detroit S41 ....119.00
Economy,Pa. B14 ....119.00
Farrell,Pa. S3 ....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 ....119.00
Houston S5 ....124.00
Ind.Harbor,Ind. Y1 ...119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 ....139.00
Lowellville,O. S3 ....119.00
Massillon,O. R2 ....119.00
Midland,Pa. C18 ....119.00
Munhall,Pa. U5 ....119.00
Owensboro,Ky. G8 ...119.00
Sharon,Pa. S3 ....119.00
S.Chicago R2,U5,W14..119.00
S.Duquesne,Pa. U5 ...119.00
Struthers,O. Y1 ....119.00
Warren,O. C17 ....119.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 ....$122.50
Canton,O. R2 ....125.00
Cleveland R2 ....122.50
Gary,Ind. U5 ....122.50
S.Chicago,Ill. R2,W14..122.50
S.Duquesne,Pa. U5 ...122.50
Warren,O. C17 ....122.50

SKELP

Aliquippa,Pa. J5 ....5.05
Benwood,W.Va. W10 ...5.05
Ind.Harbor,Ind. Y1 ....5.05
Munhall,Pa. U5 ....5.05
Pittsburgh J5 ....5.05
Warren,O. R2 ....5.05
Youngstown R2, U5 ....5.05

WIRE RODS

AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 ....6.40
Alton,Ill. L1 ....6.60
Bartonville,Ill. K4 ....6.50
Buffalo W12 ....6.40
Cleveland A7 ....6.40
Donora,Pa. A7 ....6.40
Fairfield,Ala. T2 ....6.40
Houston S5 ....6.65
IndianaHarbor,Ind. Y1 ..6.40
Johnstown,Pa. B2 ....6.40
Joliet,Ill. A7 ....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 ....6.50
LosAngeles B3 ....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 ....6.40
Pittsburg,Calif. C11 ...7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 ....6.50
S.Chicago,Ill. R2, W14..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 ....6.50
Struthers,O. Y1 ....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes

AlabamaCity,Ala. R2 ...5.50
Aliquippa,Pa. J5 ....5.50
Atlanta A11 ....5.70
Bessemer,Ala. T2 ....5.50
Bethlehem,Pa. B2 ....5.55
Birmingham C15 ....5.50
Clairton,Pa. U5 ....5.50
Fairfield,Ala. T2 ....5.50
Fontana,Calif. K1 ....6.30
Gary,Ind. U5 ....5.50
Geneva,Utah C11 ....5.50
Houston S5 ....5.60
Ind.Harbor,Ind. I-2, Y1..5.50
Johnstown,Pa. B2 ....5.55
Joliet,Ill. P22 ....5.50
KansasCity,Mo. S5 ....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 ....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 ....5.50
Niles,Calif. P1 ....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 ....6.25
Seattle B3 ....6.25
S.Chicago,Ill. U5, W14 ..5.50
S.SanFrancisco B3 ....6.15
Sterling,Ill. N15 ....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange

Bethlehem,Pa. B2 ....5.55
Clairton,Pa. U5 ....5.50
Fontana,Calif. K1 ....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 ....5.50
Sterling,Ill. N15 ....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes

Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....6.90
Munhall,Pa. U5 ....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A., Std. Shapes

Aliquippa,Pa. J5 ....8.05
Bessemer,Ala. T2 ....8.05
Bethlehem,Pa. B2 ....8.10
Clairton,Pa. U5 ....8.05
Fairfield,Ala. T2 ....8.05
Fontana,Calif. K1 ....8.85
Gary,Ind. U5 ....8.05
Geneva,Utah C11 ....8.05
Houston S5 ....8.15
Ind.Harbor,Ind. I-2, Y1..8.05
Johnstown,Pa. B2 ....8.10
KansasCity,Mo. S5 ....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 ....8.75
Munhall,Pa. U5 ....8.05
Seattle B3 ....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 ....8.70
Sterling,Ill. N15 ....7.75
Struthers,O. Y1 ....8.05

H.S., L.A., Wide Flange

Bethlehem,Pa. B2 ....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 ....8.05
S.Chicago,Ill. U5 ....8.05
Sterling,Ill. N15 ....7.75

PILING

BEARING PILES

Bethlehem,Pa. B2 ....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 ....6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel

AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 ....5.30
Ashland,Ky.(15) A10 ...5.30
Atlanta A11 ....5.50
Bessemer,Ala. T2 ....5.30
Clairton,Pa. U5 ....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 ....5.30
Coatesville,Pa. L7 ....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 ....5.30
Fairfield,Ala. T2 ....5.30
Farrell,Pa. S3 ....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 ....5.30
Geneva,Utah C11 ....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 ....5.30
Houston S5 ....5.40
Ind.Harbor,Ind. I-2, Y1..5.30
Johnstown,Pa. B2 ....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 ....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 ....5.30
Newport,Ky. A2 ....5.30
Pittsburgh J5 ....5.30
Riverdale,Ill. A1 ....5.30
Seattle B3 ....6.20
Sharon,Pa. S3 ....5.30
S.Chicago,Ill. U5, W14 ..5.30
SparrowsPoint,Md. B2 ..5.30
Sterling,Ill. N15 ....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 ....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 ....5.30

PLATES, Carbon Abras. Resist.

Claymont,Del. C22 ....7.05
Fontana,Calif. K1 ....7.85
Geneva,Utah C11 ....7.05
Houston S5 ....7.15
Johnstown,Pa. B2 ....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron

Economy,Pa. B14 ....14.10

PLATES, H.S., L.A.

Aliquippa,Pa. J5 ....7.95
Ashland,Ky. A10 ....7.95
Bessemer,Ala. T2 ....7.95
Clairton,Pa. U5 ....7.95
Claymont,Del. C22 ....7.95
Cleveland J5, R2 ....7.95
Coatesville,Pa. L7 ....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 ....7.95
Ecorse,Mich. G5 ....7.95
Fairfield,Ala. T2 ....7.95
Farrell,Pa. S3 ....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 ....7.95
Geneva,Utah C11 ....7.95
Houston S5 ....8.05
Ind.Harbor,Ind. I-2, Y1..7.95
Johnstown,Pa. B2 ....7.95
Munhall,Pa. U5 ....7.95
Pittsburgh J5 ....7.95
Seattle B3 ....8.85
Sharon,Pa. S3 ....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Sterling,Ill. N15 ....7.625
Warren,O. R2 ....7.95
Youngstown U5, Y1 ....7.95

PLATES, Alloy

Aliquippa,Pa. J5 ....7.50
Claymont,Del. C22 ....7.50
Coatesville,Pa. L7 ....7.50
Economy,Pa. B14 ....7.50
Farrell,Pa. S3 ....7.50
Fontana,Calif. K1 ....8.30
Gary,Ind. U5 ....7.50
Houston S5 ....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 ....7.50
Lowellville,O. S3 ....7.50
Munhall,Pa. U5 ....7.50
Newport,Ky. A2 ....7.50
Pittsburgh J5 ....7.50
Seattle B3 ....8.40
Sharon,Pa. S3 ....7.50
S.Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 ....7.50

FLOOR PLATES

Cleveland J5 ....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ...6.375
Munhall,Pa. U5 ....6.375
Pittsburgh J5 ....6.375
S.Chicago,Ill. U5 ....6.375

PLATES, Ingot Iron

Ashland c.l.(15) A10 ...5.55
Ashland l.c.l.(15) A10 .6.05
Cleveland c.l. R2 ....6.05
Warren,O. R2 ....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala.City,Ala.(9) R2 ...5.675
Aliquippa,Pa.(9) J5 ...5.675
Alton,Ill. L1 ....5.875
Atlanta(9) A11 ....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ...5.675
Buffalo(9) R2 ....5.675
Canton,O.(23) R2 ....6.15
Clairton,Pa.(9) U5 ...5.675
Cleveland(9) R2 ....5.675
Ecorse,Mich.(9) G5 ...5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ...5.825
Fontana,Calif.(9) K1 ..6.375
Gary,Ind.(9) U5 ....5.675
Houston(9) S5 ....5.925
Ind.Harbor(9) I-2, Y1..5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P2 ....5.675
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 ....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ...6.025
Milton,Pa. M18 ....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 ....6.375
Owensboro,Ky.(9) G8 ...6.025
Pittsburg,Calif.(9) C11..6.375
Pittsburgh(9) J5 ....5.675
Portland,Oreg. O4 ....6.425
Riverdale,Ill.(9) A1 ...5.675
Seattle(9) A24,B3,N15 ..6.425
S.Ch'e'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5 ..5.675
S.SanFran.,Calif.(9)B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ...5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ...5.675
Torrance,Calif.(9) C11 .6.375
Warren,O. C17 ....6.025
Youngstown(9) R2,U5..5.675

BARS, Hot-Rolled Alloy

Aliquippa,Pa. J5 ....6.725
Bethlehem,Pa. B2 ....6.725
Bridgeport,Conn. C32 ...6.80
Buffalo R2 ....6.725
Canton,O. R2, T7 ....6.725
Clairton,Pa. U5 ....6.725
Detroit S41 ....6.725
Economy,Pa. B14 ....6.725
Ecorse,Mich. G5 ....6.725
Fairless,Pa. U5 ....6.875
Farrell,Pa. S3 ....6.725
Fontana,Calif. K1 ....7.775
Gary,Ind. U5 ....6.725
Houston S5 ....6.975
Ind.Harbor,Ind. I-2, Y1 6.725
Johnstown,Pa. B2 ....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2 ..6.725
LosAngeles B3 ....7.775
Lowellville,O. S3 ....6.725
Massillon,O. R2 ....6.725
Midland,Pa. C18 ....6.725
Owensboro,Ky. G8 ....6.725
Pittsburgh J5 ....6.725
Sharon,Pa. S3 ....6.725
S.Chicago R2, U5, W14..6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 ....6.725
Warren,O. C17 ....6.725
Youngstown U5 ....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy

Aliquippa,Pa. J5 ....8.30
Bessemer,Ala. T2 ....8.30
Bethlehem,Pa. B2 ....8.30
Clairton,Pa. U5 ....8.30
Cleveland R2 ....8.30
Ecorse,Mich. G5 ....8.30
Fairfield,Ala. T2 ....8.30
Fontana,Calif. K1 ....9.00
Gary,Ind. U5 ....8.30
Houston S5 ....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 ....8.30
KansasCity,Mo. S5 ....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 ....9.00
Pittsburgh J5 ....8.30
Seattle B3 ....9.05
S.Chicago,Ill. R2, W14..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Sterling,Ill. N15 ....7.925
Struthers,O. Y1 ....8.30
Youngstown U5 ....8.30

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 ....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 ....5.775
Sterling,Ill.(1) N15 ...5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. SHAPES

Aliquippa,Pa. J5 ....5.675
Atlanta A11 ....5.875
Joliet,Ill. P22 ....5.675
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 ....6.375
Pittsburgh J5 ....5.675
Portland,Oreg. O4 ....6.425
SanFrancisco B7 ....6.52
Seattle B3 ....6.425

BAR SIZE ANGLES; S. SHAPES Wrought Iron

Economy,Pa. B14 ....16.45

BAR SHAPES, Hot-Rolled Alloy

Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 ....6.80
Youngstown U5 ....6.80

BARS, C.F. Leaded (Including leaded extra)

Carbon

LosAngeles P2, S30 ..11.75*

Alloy

Ambridge,Pa. W18 ...10.175
BeaverFalls,Pa. M12..10.175
Camden,N.J. P13 ....10.35
Chicago W18 ....10.175
Elyria,O. W8 ....10.175
Monaca,Pa. S17 ....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.5c for Grade B.

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 ....7.65
BeaverFalls,Pa. M12,R2..7.65
Birmingham C15 ....8.25
Buffalo B5 ....7.70
Camden,N.J. P13 ....8.10
Carnegie,Pa. C12 ....7.65
Chicago W18 ....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 ....7.85
Detroit S41 ....7.65
Donora,Pa. A7 ....7.65
Elyria,O. W8 ....7.65
FranklinPark,Ill. N5 ...7.65
Gary,Ind. R2 ....7.65
GreenBay,Wis. F7 ....7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 ....8.15
Harvey,Ill. B5 ....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2..9.10
Mansfield,Mass. B5 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 ....7.65
Monaca,Pa. S17 ....7.65
Newark,N.J. W18 ....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 ....7.65
Plymouth,Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 ....8.10
Struthers,O. Y1 ....7.65
Warren,O. C17 ....7.65
Waukegan,Ill. A7 ....7.65
Willimantic,Conn. J5 ...8.15
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19..6.55

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 ....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 ....9.025
Camden,N.J. P13 ....9.20
Canton,O. T7 ....9.025
Carnegie,Pa. C12 ....9.025
Chicago W18 ....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 ....9.225
Detroit S41 ....9.025
Donora,Pa. A7 ....9.025
Elyria,O. W8 ....9.025
FranklinPark,Ill. N5 ..9.025
Gary,Ind. R2 ....9.025
GreenBay,Wis. F7 ....9.025
Hammond,Ind. J5, L2 ..9.025
Hartford,Conn. R2 ....9.325
Harvey,Ill. R5 ....9.025
Lackawanna,N.Y. B3 ..9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5 ...9.325
Massillon,O. R2, R8 ...9.025
Midland,Pa. C18 ....9.025
Monaca,Pa. S17 ....9.025
Newark,N.J. W18 ....9.20
Plymouth,Mich. P5 ...9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 ....9.20
Struthers,O. Y1 ....9.025

Warren,O. C17 .....9.025
Waukegan,Ill. A7 ....9.025
Willimantic,Conn. J5 ...9.325
Worcester,Mass. A7 ...9.325
Youngstown J5, Y1 ...9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.25
Birmingham C15 .....5.25
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 ...6.375
Ft. Worth,Tex.(26) T4...5.50
Gary,Ind. U5 .....5.675
Houston S5 .....5.675
Ind.Harbor,Ind. I-2,Y1.5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ....5.675
Kokomo,Ind. C16 ....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ..6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 .....6.425
SandSprings,Okla. S5 ..5.675
Seattle A24, B3, N14..6.425
S.Chicago,Ill. R2, W14.5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2..5.675
Sterling,Ill.(1) N15 ...5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ..6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated: To Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.35
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.35
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ...7.35
Seattle A24, B3, N14 ..7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ..7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 15.10
Economy,Pa.(D.R.)B14 19.30
Econ.(DirectRolled)B14 13.55
Economy(Staybolt)B14 19.80
McK.Rks.(S.R.) L5 ...14.50
McK.Rks.(D.R.) L5 ...19.80
McK.Rks.(Staybolt)L5. 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2.5.575
ChicagoHts.(4)(44) I-2.5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O(3) P11 .....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ....5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ....5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 ....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14.7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ...7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ...5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Aliquippa,Pa. J5 .....6.275
Allenport,Pa. P7 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ...7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ....6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 ....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(38) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(33) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert	**Cu Steel**	**Cu Fe**
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	....
Fairfield,Ala. T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill. G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2....7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2..6.875‡
Ashland,Ky. A10 ....6.875‡
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10..6.875*
Middletown,O. A10 ..6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.125
Pittsburgh J5 .....10.125
SparrowsPt.(39) B2 ..10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Weirton,W.Va. W6 .....7.50
Youngstown J5 .....7.50

SHEETS, Well Casing

Fontana,Calif. K1 .....7.325

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625
Irvin,Pa. U5 (type 1)..9.525

SHEETS, Enameling

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
Ind.Harbor,Ind. I-2, Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 ....6.775
SparrowsPoint,Md. B2..6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Ind Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key to Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A24 Alaska Steel Mills Inc.

B1 Babcock & Wilcox
B2 Bethlehem Steel Co.
B3 Bethlehem Steel Co., Pacific Coast Div.
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co., Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E6 Empire-Reeves Steel
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Specialty Wire Co. Inc.
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.
M23 Mill Strip Products Co. of Pennsylvania

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forging Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Div., Bliss & Laughlin Inc.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J & L Steel Corp.
S42 Southern Elec. Steel Co.
S43 Seymour Mfg. Co.
S44 Screw & Bolt Corp. of America

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Wire Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 U. S. Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2 ...5.10
Allenport, Pa. P7 .....5.10
Alton, Ill. L1 .....5.30
Ashland, Ky. (8) A10 ....5.10
Atlanta A11 .....5.10
Bessemer, Ala. T2 .....5.10
Birmingham C15 .....5.10
Conshohocken, Pa. A3 ..5.15
Detroit M1 .....5.10
Ecorse, Mich. G5 .....5.10
Fairfield, Ala. T2 .....5.10
Farrell, Pa. S3 .....5.10
Fontana, Calif. K1 ....5.825
Gary, Ind. U5 .....5.10
Ind. Harbor, Ind. I-2, Y1..5.10
Johnstown, Pa. (25) B2 ..5.10
Lackaw'na, N.Y. (25) B2.5.10
LosAngeles (25) B3 .....5.85
LosAngeles C1 .....8.60
Minnequa, Colo. C10 ....6.20
Riverdale, Ill. A1 .....5.10
SanFrancisco S7 .....6.60
Seattle (25) B3 .....6.10
Seattle N14 .....6.60
Sharon, Pa. S3 .....5.10
S. Chicago, Ill. W14 .....5.10
S. SanFrancisco (25) B3..5.85
SparrowsPoint, Md. B2 ..5.10
Torrance, Calif. C11 ....5.85
Warren, O. R2 .....5.10
Weirton, W. Va. W6 .....5.10
Youngstown U5 .....5.10

STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18 .....8.40
Farrell, Pa. S3 .....8.40
Gary, Ind. U5 .....8.40
Houston S5 .....8.65
Ind. Harbor, Ind. Y1 ....8.40
KansasCity, Mo. S5 .....8.65
LosAngeles B3 .....9.60
Lowellville, O. S3 .....8.40
Newport, Ky. A2 .....8.40
Sharon, Pa. A2, S3 .....8.40
S. Chicago, Ill. W14 .....8.40
Youngstown U5, Y1 ....8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland, Ky. A10 .....7.575
Bessemer, Ala. T2 .....7.575
Conshohocken, Pa. A3 ..7.575
Ecorse, Mich. G5 .....7.575
Fairfield, Ala. T2 .....7.675
Farrell, Pa. S3 .....7.575
Gary, Ind. U5 .....7.575
Ind. Harbor, Ind. I-2, Y1 7.575
Lackawanna, N.Y. B2 ..7.575
LosAngeles (25) B3 ....8.325
Seattle (25) B3 .....8.575
Sharon, Pa. S3 .....7.575
S. Chicago, Ill. W14 ....7.575
S. SanFrancisco (25) B3.8.325
SparrowsPoint, Md. B2 .7.575
Warren, O. R2 .....7.575
Weirton, W. Va. W6 ....7.575
Youngstown U5, Y1 ...7.575

STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10 ....5.35
Warren, O. R2 .....5.875

STRIP, Cold-Rolled Carbon

Anderson, Ind. G6 .....7.425
Baltimore T6 .....7.425
Boston T6 .....7.975
Buffalo S40 .....7.425
Cleveland A7, J5 .....7.425
Dearborn, Mich. S3 ...7.425
Detroit D2, M1, P20 ..7.425
Dover, O. G6 .....7.425
Evanston, Ill. M22 ....7.525
Farrell, Pa. S3 .....7.425
Follansbee, W. Va. W10 .7.425
Fontana, Calif. K1 .....9.20
FranklinPark, Ill. T6 ..7.525
Ind. Harbor, Ind. Y1 ....7.425
Indianapolis S41 .....7.575
LosAngeles C1, S41 .....9.30
McKeesport, Pa. E10 ....7.525
NewBedford, Mass. R10.7.875
NewBritain, Conn. S15 .7.875
NewCastle, Pa. B4, M23 7.425
NewHaven, Conn. D2 ..7.875
NewKensington, Pa. A6 .7.425
Pawtucket, R.I. R3, N8 7.975
Philadelphia P24 .....7.875
Pittsburgh J5 .....7.425
Riverdale, Ill. A1 .....7.525
Rome, N.Y. (32) R6 ....7.425
Sharon, Pa. S3 .....7.425
Trenton, N.J. (31) R5 ..8.875
Warren, O. R2, T5 .....7.425
Worcester, Mass. A7 ...7.975

STRIP, Cold-Rolled Alloy

Boston T6 .....15.90
Cleveland A7 .....15.55
Carnegie, Pa. S18 .....15.55
Dover, O. G6 .....15.55
Farrell, Pa. S3 .....15.55
FranklinPark, Ill. T6 ..15.55
Harrison, N.J. S18 .....15.55
Indianapolis S41 .....15.70
LosAngeles S41 .....17.75
Lowellville, O. S3 .....15.55
Pawtucket, R.I. N8 ....15.90
Riverdale, Ill. A1 .....15.55
Sharon, Pa. S3 .....15.55
Worcester, Mass. A7 ...15.85
Youngstown S41 .....15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.80
Dearborn, Mich. S3 ....10.80
Dover, O. G6 .....10.80
Farrell, Pa. S3 .....10.80
Ind. Harbor, Ind. Y1 ....10.80
Sharon, Pa. S3 .....10.80
Warren, O. R2 .....10.80
Weirton, W. Va. W6 ....10.80
Youngstown Y1 .....10.80

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2 .....8.175

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Anderson, Ind. G6	9.10	....	....	....	....
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W1	....	10.70	12.90	16.10	19.30
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn, Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover, O. G6	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M22	9.05	10.10	12.60	15.60	....
Farrell, Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria, O. S1	10.05	10.40	12.60	15.60	....
FranklinPark, Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison, N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain, Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle, Pa. B4, M23	8.95	10.10	12.60	15.60	....
NewHaven, Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington, Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	....	10.70	12.90	16.10	19.30
Pawtucket, R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome, N.Y. R6	8.95	10.40	12.60	15.60	18.55
Sharon, Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton, N.J. R5	....	10.70	12.90	15.90	18.85
Warren, O. T5	8.95	10.40	12.60	15.60	18.55
Worcester, Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)			Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol, Conn. W1	...	...	18.85	22.95	27.80
Buffalo W12	...	...	18.85	....	....
Fostoria, O. S1	...	...	19.05	22.15	....
FranklinPark, Ill. T6	...	...	19.20	23.30	28.15
Harrison, N.J. C18	...	...	18.85	22.95	27.80
NewYork W3	...	...	18.85	22.95	27.80
Palmer, Mass. W12	...	...	18.85	....	....
Trenton, N.J. R5	...	...	18.85	22.95	27.80
Worcester, Mass. A7, T6	...	...	18.85	22.95	27.80
Youngstown S41	...	...	19.20	23.30	28.15

STRIP, C.R., Electrogalvanized

Cleveland A7 .....7.425*
Dover, O. G6 .....7.425*
Evanston, Ill. M22 ....7.525*
McKeesport, Pa. E10 ...7.50*
NewCastle, Pa. M23 ..7.425*
Riverdale, Ill. A1 .....7.525*
Warren, O. B9, S3, T5.7.425*
Worcester, Mass. A7 ...7.975
Youngstown S41, Y1 .7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell, Pa. S3 .....7.50
Sharon, Pa. S3 .....7.50

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.825
Farrell, Pa. S3 .....5.525
Riverdale, Ill. A1 .....5.675
Sharon, Pa. S3 .....5.525
Youngstown U5 .....5.525

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa, Pa. J5	$9.10	$9.35	$9.75
Fairfield, Ala. T2	9.20	9.45	9.85
Fairless, Pa. U5	9.20	9.45	9.85
Fontana, Calif. K1	9.75	10.00	10.40
Gary, Ind. U5	9.10	9.35	9.75
GraniteCity, Ill. G4	9.20	9.45	9.85
IndianaHarbor, Ind. I-2, Y1	9.10	9.35	9.75
Irvin, Pa. U5	9.10	9.35	9.75
Niles, O. R2	9.10	9.35	9.75
Pittsburg, Calif. C11	9.75	10.00	10.40
SparrowsPoint, Md. B2	9.10	9.35	9.75
Weirton, W. Va. W6	9.10	9.35	9.75
Yorkville, O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per 100 lb)			
Aliquippa, Pa. J5 (21-27 Ga.)	7.90	8.10	....
IndianaHarbor, Ind. Y1 (20-27 Ga.)	7.90	....	....
Niles, O. R2 (20-27 Ga.)	7.90	8.10	8.30

TIN PLATE, Hot Dipped Common Coke	1.25 lb	1.50 lb
Aliquippa, Pa. J5	$10.40	$10.65
Fairfield, Ala. T2	10.50	10.75
Fontana, Calif. K1	11.05	11.30
Gary, Ind. U5	10.40	10.65
Irvin, Pa. U5	10.40	10.65
Pitts., Calif. C11	11.05	11.30
Sp. Pt., Md. B2	10.40	10.65
Weirton, W. Va. W6	10.40	10.65
Yorkville, O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa, Pa. J5 .....$8.20
Fairfield, Ala. T2 .....8.30
Fairless, Pa. U5 .....8.30
Fontana, Calif. K1 .....8.85
Gary, Ind. U5 .....8.20
GraniteCity, Ill. G4 .....8.30
Ind. Harbor, Ind. I-2, Y1 8.20
Irvin, Pa. U5 .....8.20
Niles, O. R2 .....8.20
Pittsburg, Calif. C11 ....8.85
SparrowsPoint, Md. B2 ..8.20
Weirton, W. Va. W6 ....8.20
Yorkville, O. W10 .....8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa, Pa. J5 .....7.85
Gary, Ind. U5 .....7.85
GraniteCity, Ill. G4 .....7.95
Ind. Harbor, Ind. Y1 ....7.85
Irvin, Pa. U5 .....7.85
Yorkville, O. W10 .....7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary, Ind. U5 .....$10.05
Irvin, Pa. U5 .....10.05

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom, W. Va. W10	....	11.70	12.40	13.35	14.65
Brackenridge, Pa. A4	....	....	12.40	13.55	14.65
GraniteCity, Ill. G4	....	9.975*11.30*	12.00*	13.15*	....
IndianaHarbor, Ind. I-2	....	9.875*11.20*	11.90*	13.05*	....
Mansfield, O. E6	....	9.875*11.70	12.40	13.55	14.65
Newport, Ky. A2	....	9.875 11.70*	12.40*	13.55*	14.65*
Niles, O. M21	....	9.875*11.70	12.40	13.55	....
Vandergrift, Pa. U5	....	9.875*11.70	12.40	13.55	14.65
Warren, O. R2	....	9.875*11.70	12.40	13.55	14.65
Zanesville, O. A10	....	.... 11.70†	12.40	13.55	14.65

	Stator
Vandergrift, Pa. U5	8.10
Mansfield, O. E6	8.10
Warren, O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths)

Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom, W. Va. W10	15.70	16.30	16.80	17.85
Vandergrift, Pa. U5	15.70	16.30	16.80	17.85
Zanesville, O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge, Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler, Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift, Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren, O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed; semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity, Ala. R2 ..8.00
Aliquippa, Pa. J5 .....8.00
Alton, Ill. L1 .....8.20
Atlanta A1 .....8.00
Bartonville, Ill. K4 .....8.10
Buffalo W12 .....8.00
Chicago W13 .....8.00
Cleveland A7, C20 .....8.00
Crawfordsville, Ind. M8..8.10
Donora, Pa. A7 .....8.00
Duluth A7 .....8.00
Fairfield, Ala. T2 .....8.00
Fostoria, O. (24) S1 .....8.10
Houston S5 .....8.25
Jacksonville, Fla. M8 ...8.35
Johnstown, Pa. B2 .....8.00
Joliet, Ill. A7 .....8.00
KansasCity, Mo. S5 .....8.25
Kokomo, Ind. C16 .....8.10
LosAngeles B3 .....8.95
Minnequa, Colo. C10 ....8.25
Monessen, Pa. P7, P16..8.00
Palmer, Mass. W12 .....8.30
Pittsburg, Calif. C11 ...8.95
Portsmouth, O. P12 .....8.00
Rankin, Pa. A7 .....8.00
S. Chicago, Ill. R2 .....8.00
S. SanFrancisco C10 ....8.95
SparrowsPoint, Md. B2 ..8.10
Sterling, Ill. (1) N15 ....8.00
Sterling, Ill. N15 .....8.10
Struthers, O. Y1 .....8.00
Waukegan, Ill. A7 .....8.00
Worcester, Mass. A7 ....8.30

WIRE, Cold Heading Carbon

Elyria, O. W8 .....8.00

WIRE, Gal'd., for ACSR

Bartonville, Ill. K4 .....12.65
Buffalo W12 .....13.40
Cleveland A7 .....12.65
Donora, Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown, Pa. B2 .....13.40
KansasCity, Mo. U3 ...12.90
Minnequa, Colo. C10 ..12.775
Monessen, Pa. P7, P16..12.65
Muncie, Ind. I-7 .....13.60
NewHaven, Conn. A7 ..12.95
Palmer, Mass. W12 .....13.70
Pittsburg, Calif. C11 ...13.45
Portsmouth, O. P12 .....12.65
Roebling, N.J. R5 .....12.95
SparrowsPt., Md. B2 ....13.50
Struthers, O. Y1 .....13.40
Trenton, N.J. A7 .....12.95
Waukegan, Ill. A7 .....12.65
Worcester, Mass. A7 ....12.95

WIRE, Upholstery Spring

Aliquippa, Pa. J5 .....9.75
Alton, Ill. L1 .....9.95
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora, Pa. A7 .....9.75
Duluth A7 .....9.75
Johnstown, Pa. B2 .....9.75
KansasCity, Mo. S5, U3.10.00
Kokomo, Ind. C16 .....9.85
LosAngeles B3 .....10.70
Minnequa, Colo. C10 ....9.95
Monessen, Pa. P7, P16 .9.75
NewHaven, Conn. A7 ..10.05
Palmer, Mass. W12 .....10.05
Pittsburg, Calif. C11 ...10.70
Portsmouth, O. P12 .....9.75
Roebling, N.J. R5 .....10.05
S. Chicago, Ill. R2 .....9.75
S. SanFrancisco C10 ...10.70
SparrowsPt., Md. B2 ....9.85
Struthers, O. Y1 .....9.75
Trenton, N.J. A7 .....10.05
Waukegan, Ill. A7 .....9.75
Worcester, Mass. A7 ...10.05

WIRE, MB Spring, High-Carbon

Aliquippa, Pa. J5 .....9.75
Alton, Ill. L1 .....9.95
Bartonville, Ill. K4 .....9.85
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora, Pa. A7 .....9.75
Duluth A7 .....9.75
Fostoria, O. S1 .....9.80
Johnstown, Pa. B2 .....9.75
KansasCity, Mo. S5, U3.10.00
LosAngeles B3 .....10.70
Millbury, Mass. (12) N6 .10.05
Minnequa, Colo. C10 ....9.95
Monessen, Pa. P7, P16..9.75
Muncie, Ind. I-7 .....9.95
Palmer, Mass. W12 .....10.05
Pittsburg, Calif. C11 ...10.70
Portsmouth, O. P12 .....9.75
Roebling, N.J. R5 .....10.05
S. Chicago, Ill. R2 .....9.75
S. SanFrancisco C10 ...10.70
SparrowsPt., Md. B2 ....9.85
Struthers, O. Y1 .....9.75
Trenton, N.J. A7 .....10.05
Waukegan, Ill. A7 .....9.75
Wor'ster, Mass. A7, J4, T6 10.05

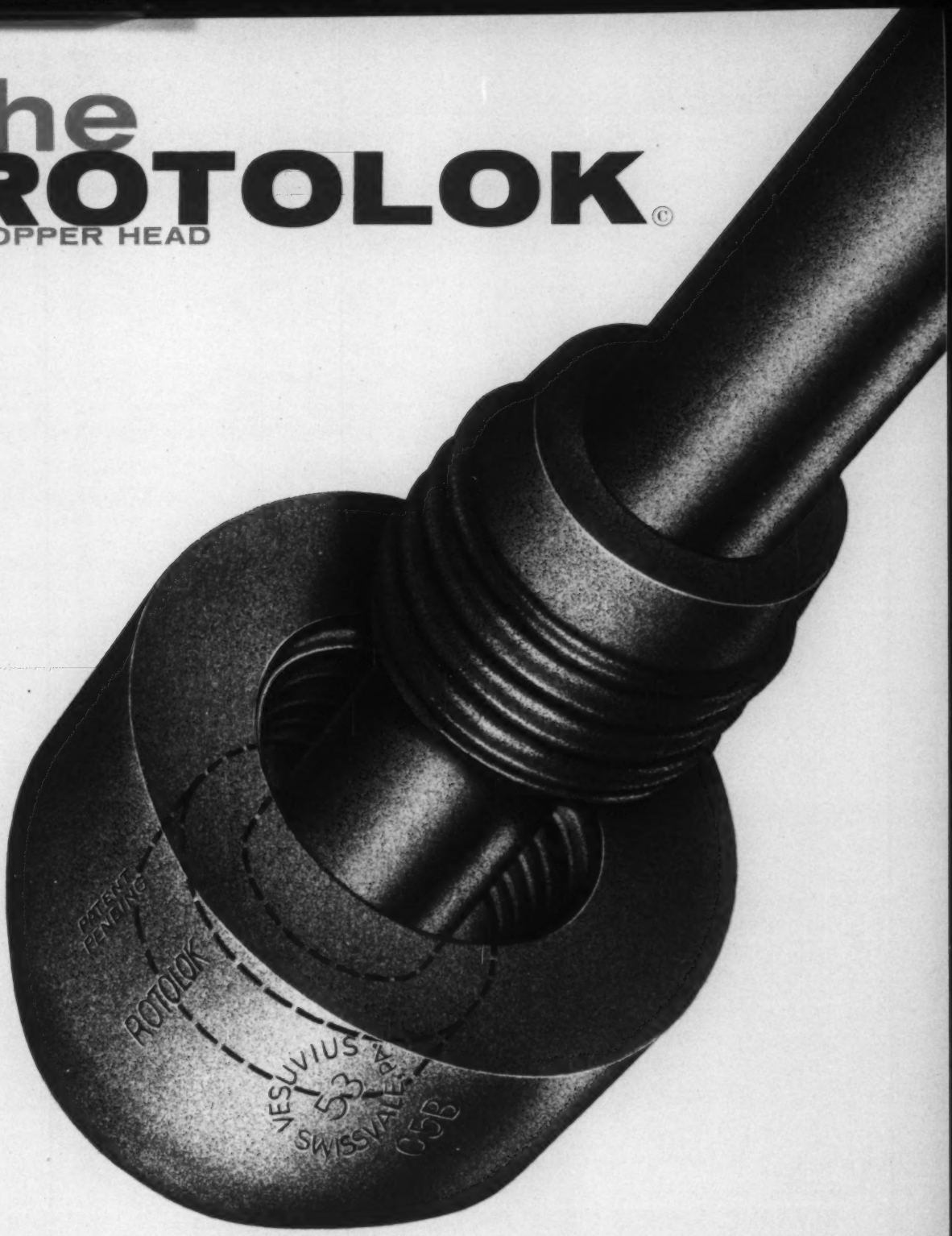
WIRE, Fine & Weaving (8" Coils)

Alton, Ill. L1 .....16.50
Bartonville, Ill. K4 ....16.40
Chicago W13 .....16.30
Cleveland A7 .....16.30
Crawfordsville, Ind. M8..16.40
Fostoria, O. S1 .....16.30
Houston S5 .....16.55
Jacksonville, Fla. M8 ..16.65
Johnstown, Pa. B2 .....16.30
KansasCity, Mo. S5 ....16.55
Kokomo, Ind. C16 .....16.30
Minnequa, Colo. C16 ...16.55
Monessen, Pa. P16 .....16.30
Muncie, Ind. I-7 .....16.50
Palmer, Mass. W12 .....16.60
S. SanFrancisco C10 ...17.15
Waukegan, Ill. A7 .....16.30
Worcester, Mass. A7, J6.16.60

ROPE WIRE (A)

Bartonville, Ill. K4 .....13.45
Buffalo W12 .....13.45
Fostoria, O. S1 .....13.45
Johnstown, Pa. B2 .....13.45
Monessen, Pa. P7 .....13.45
Muncie, Ind. I-7 .....13.65
Palmer, Mass. W12 ....13.75
Portsmouth, O. P12 ....13.45
Roebling, N.J. R5 .....13.75
St. Louis L8 .....13.45
SparrowsPt., Md. B2 ..13.55
Struthers, O. Y1 .....13.45
Worcester, Mass. J4 ...13.75
(A) Plow and Mild Plow; add 0.25c for Improved Plow.

the ROTOLOK©
STOPPER HEAD



Conceived and developed by

VESUVIUS CRUCIBLE COMPANY

for the metal pouring industry

SWISSVALE **PITTSBURGH 18, PA.**

"When you put in the Payroll Savings Plan... How did it affect company stock purchases by your employees?"

"Not a bit, Al! You see, quite a number of our people had never made any investment of any kind through regular deductions. When we put in the Payroll Savings Plan for U.S. Savings Bonds we gave many of them a brand new idea. Automatic saving!

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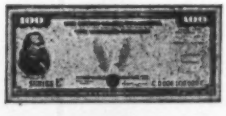
STEEL
The Metalworking Weekly



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WIRE, Tire Bead

Bartonville,Ill. K4	17.15
Monessen,Pa. P16	17.15
Roebling,N.J. R5	17.65

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	12.35
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer, Mass. W12	12.65
Pawtucket,R.I. N8	12.65
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock Sizes — Col.

AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	173
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	175
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers: per cwt)

Galveston,Tex. D7	$10.30

NAILS, CUT (100 lb kegs)

Wheeling,W.Va., W10	$10.10

POLISHED STAPLES — Col.

AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	173
Bartonville,Ill. K4	175
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	178
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

TIE WIRE, Automatic Baler (14½ Ga.) (per 97 lb Net Box) Coil No. 3150

AlabamaCity,Ala. R2	$8.78
Atlanta A11	10.36
Bartonville,Ill. K4	8.88
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville,Ind. M8	8.88
Donora,Pa. A7	8.78
Duluth A7	8.78
Fairfield,Ala. T2	8.78
Houston S5	10.51
Jacksonville,Fla. M8	8.88
Johnstown,Pa. B2	8.78
Joliet,Ill. A7	8.78
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	8.88
LosAngeles B3	9.44
Minnequa,Colo. C10	9.02
Pittsburg,Calif. C11	9.44
S.Chicago,Ill. R2	8.78
S.SanFrancisco C10	9.94
SparrowsPt.,Md. B2	8.88
Sterling,Ill.(37) N15	8.88

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$9.06
Atlanta A11	10.70
Bartonville,Ill. K4	9.16
Buffalo W12	10.60
Chicago W13	9.54
Crawfordsville,Ind. M8	9.16
Donora,Pa. A7	9.06
Duluth A7	9.06
Fairfield,Ala. T2	9.06
Houston S5	10.85
Jacksonville,Fla. M8	9.16
Johnstown,Pa. B2	9.06
Joliet,Ill. A7	9.06
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	9.16
LosAngeles B3	9.75
Minnequa,Colo. C10	9.30
Pittsburg,Calif. C11	9.75
S.Chicago,Ill. R2	9.06
S.SanFrancisco C10	10.26
SparrowsPt.,Md. B2	9.16
Sterling,Ill.(37) N15	9.16

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$9.11
Atlanta A11	10.75
Bartonville,Ill. K4	9.21
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville,Ind. M8	9.21
Donora,Pa. A7	9.11
Duluth A7	9.11
Fairfield,Ala. T2	9.11
Houston S5	10.90
Jacksonville,Fla. M8	9.21
Johnstown,Pa. B2	9.11
Joliet,Ill. A7	9.11
KansasCity,Mo. S5	10.96
Kokomo,Ind. C16	9.21
LosAngeles B3	9.80
Minnequa,Colo. C10	9.35
Pittsburg,Calif. C11	9.80
S.Chicago,Ill. R2	9.11
S.SanFrancisco C10	10.31
SparrowsPt.,Md. B2	9.21
Sterling,Ill.(37) N15	9.21

BALE TIES, Single Loop — Col.

AlabamaCity,Ala. R2	212
Atlanta A11	212
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS — Col.

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	177

WIRE, Barbed — Col.

AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	197*
Bartonville,Ill. K4	199
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198

WOVEN FENCE, 9-15 Ga. — Col.

Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	191*
Bartonville,Ill. K4	193
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192

WIRE (16 gage)	An'ld Galv. Stone	Stone
Ala.City,Ala.R2	17.85	19.40**
Ali'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.80
Cleveland A7	17.85	...
Craw'sville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	18.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	...
Kokomo C16	17.95	19.50†
Minnequa C10	18.10	19.65**
P'lm'r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
St'ling(37) N15	17.95	19.80
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	...

WIRE, Merchant Quality

(6 to 8 gage)	An'ld Galv.
Ala.City,Ala. R2	9.00 9.55**
Aliquippa J5	8.65 9.325§
Atlanta(48) A11	9.00 9.75*
Bartonville(48) K4	9.85 19.90
Buffalo W12	9.00 9.55†
Cleveland A7	9.00 ...
Crawfordsville M8	9.10 9.80††
Donora,Pa. A7	9.00 9.55†
Duluth A7	9.00 9.55†
Fairfield T2	9.00 9.55†
Houston(48) S5	9.25 9.80**
Jack'ville,Fla. M8	9.10 9.80‡‡
Johnstown(48) B2	9.00 9.675§
Joliet,Ill. A7	9.00 9.55†
KansasCity(48)S5	9.25 9.80**
Kokomo(48) S16	9.10 9.65†
LosAngeles B3	9.95 10.625§
Minnequa C10	9.25 9.80**
Monessen(48) P7	8.65 9.35§
Palmer,Mass. W12	9.30 9.85†
Pitts.,Calif. C11	9.95 10.50†
Rankin,Pa. A7	9.00 9.55†
S.Chicago R2	9.00 9.55**
S.SanFran. C10	9.95 10.50**
Spar'wsPt.(48)B2	9.10 9.775§
St'ling(37)(48)N15	9.10 9.80
Struthers,O. Y1	9.00 9.65‡
Worcester,Mass.A7	9.30 9.85†

Based on zinc prices of: *13.50c. †5c. §10c. ‡Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras.

FASTENERS

(Consumer discounts per cent off list prices, orders for 1 container for assorted sizes; for less than container quantities, add 25 per cent; attaching nuts to bolts, package sizes, add 7.5 per cent; heavy hex nut 1⅛ in. through 1½ in. tapped 8 threads, add 10 per cent)

HEX HEAD CAP SCREWS, coarse, or fine thread, packaged or bulk, with or without hex nuts, 1020 steel bright and high carbon heat treated, ¼ in. thru 1 in. diam., listed lengths:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packaged	43.75
Bulk	50

BOLTS, Standard stock sizes:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packaged	43.75
*Bulk	50

*Hot galvanized or zinc plated lag bolts only — for package or bulk quantities use applicable list less bulk discounts.

HEXAGON NUTS, American Standard: Finished hex, hex jam, and hex slotted coarse or fine thread, ¼ in. through 3 in., finished hex thick, thick and slotted, castle, fine thread, ¼ in. through 1½ in., semifinished hex heavy, heavy and jam, heavy and slotted, coarse thread, ¼ in. through 4 in., and

SQUARE NUTS, American Standard: Regular square and heavy square, coarse thread, ¼ in. through 2 in.:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packages	43.75
Bulk	50

CAP AND SETSCREWS,

Fillister Head, Cap Screws, Coarse Thread:

Packages	+55
Bulk	+16

Flat Head Cap Screws: ¼ in. and smaller, 6 in. and shorter:

Packages	+85
Bulk	+38

Setscrews, Square Head, Cup Point, Coarse Thread: Through 1 in. diam., 6 in. and shorter:

Packages	+5
Bulk	19

Through 1 in. diam., longer than 6 in.:

Packages	+29

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great. Structural ½ in., larger 12.85 7/8 in. and smaller by 6 in. and shorter: 15% off list.

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Standard Diameter, Inches				
	1/4	5/16	3/8	7/16	1/2
Buffalo W12	$26.20	$38.50	$47.90	$61.30	$80.30
KansasCity,Mo. U3	26.20	38.50	47.90	61.30	80.30
Minnequa,Colo. C10	26.20	38.50	47.90	61.30	80.30
Pittsburg,Calif. C11	26.20	38.50	47.90	61.30	80.30
Roebling,N.J. R5	26.20	38.50	47.90	61.30	80.30
SparrowsPoint,Md. B2	26.20	38.50	47.90	61.30	80.30
St.Louis L8	26.20	38.50	47.90	61.30	80.30
Waukegan,Ill. A7	26.20	38.50	47.90	61.30	80.30

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut length 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	27.24	23.13
1¼	13	....	32.25	24.41
1½	13	30.42	35.65	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2½	12	49.24	57.72	43.70
2½	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails 60 lb All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.725
Johnstown,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	7.025

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

SCREW SPIKES

Lebanon,Pa. B2	15.10

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh S44	15.35
Seattle B3	15.85

STANDARD TRACK SPIKES

Fairfield,Ala T2	10.10
Ind.Harbor,Ind. I-2, Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(3) Merchant.
(4) Reinforcing.
(5) 1½ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in.; 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(12) Worcester, Mass., base.
(15) 5/16" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 5.65c.
(27) Bar mill sizes.
(28) Bonderized.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over 5/8 in.; 7.375c, for widths 5/8 in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) 14 Ga., 48 in.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds, 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Youngstown Y1	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Alton, Ill. L1	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Benwood, W. Va. W10	1.5	+27	+10.5	+36	+21	+45.5	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Butler, Pa. F6	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+28	+7.75	+24	+4.25	+19.5	+1.75	+18.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+16	4.25	+12	7.75	+7.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sharon, Pa. S4	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sparrows Pt., Md. B2	2.5	+26	+10.5	+36	+21.5	+46	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Wheatland, Pa. W9	4.5	+24	+8.5	+34	+19.5	+44	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.75		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Alton, Ill. L1	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Benwood, W. Va. W10	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Etna, Pa. N2	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Fairless, Pa. N3	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Fontana, Calif. K1	+1.25	+17.25	+0.75	+16.75	0.75	+16.5	0.75	+16.5	+9.75	+27.5	+9.75	+27.5
Indiana Harbor, Ind. Y1	10.75	+5.25	11.25	+4.75	12.75	+4.5	12.75	+4.5	2.25	+15.5	2.25	+15.5
Lorain, O. N3	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Wheatland, Pa. W9	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Youngstown R2, Y1	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5

*Galvanized pipe discounts based on price of zinc at 13.00c, East St. Louis.

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI	—Rerolling—		Forging	H.R.	H.R. Rods; C.F.	Bars; Structural			C.R. Strip; Flat
Type	Ingot	Slabs	Billets	Strip	Wire	Shapes	Plates	Sheets	Wire
201	22.75	25.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	28.25	37.75	30.00	42.25	44.50	40.00	40.25	49.25
301	24.00	26.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	29.50	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	30.75	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	31.25	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	34.75	44.00	47.50	47.00	49.50	46.25	58.75	58.75
308	32.00	36.25	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	47.50	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	59.50	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	47.50	64.50	68.50	71.25	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	58.00	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	38.00	48.75	53.50	54.50	57.50	54.75	65.00	65.50
330	....	....	122.25	....	113.00	142.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	19.50	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	31.50	35.50	41.75	40.75	42.75	40.25	62.00	62.00	62.00
430	17.75	19.75	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; Calstrip Steel Corp.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co., Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.; Seymour Mfg. Co.

Clad Steel

	Plates				Sheets
	Carbon Base				Carbon Base
	5%	10%	15%	20%	20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	49.80	61.35	72.80	84.40	....
Nickel	43.20	55.05	66.95	78.90	....
Nickel, Low Carbon	43.50	55.70	67.95	80.35	....
Monel	44.25	55.35	66.45	77.60	....

	Strip, Carbon Base —Cold Rolled—	
	10%	Both Sides
Copper*	36.80	44.20

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22; Coatesville, Pa. L7; New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	Hi-Carbon-Cr (D-11)	0.955
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W-Cr Hot Work (H-12)	0.530
V-Cr Hot Work (H-11)	0.505	W Hot Wk (H-21)	1.425-1.44

Grade by Analysis (%)					AISI	
W	Cr	V	Co	Mo	Designation	$ per lb
18	4	1	....	...	T-1	1.840
18	4	2	....	...	T-2	2.005
13.5	4	3	....	...	T-3	2.105
18.25	4.25	1	4.75	...	T-4	2.545
18	4	2	9	...	T-5	2.915
20.25	4.25	1.6	12.95	...	T-6	4.330
13.75	3.75	2	5	...	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

Prices in dollars per gross ton, f.o.b. (rail) furnace; add 50 cents when shipped by truck. Minimum delivered prices are approximate and based on rail shipment.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward, Ala. W15	62.00*	62.50**	66.50	....
Cincinnati deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N. Tonawanda, N.Y. T9	....	66.50	67.00	67.50
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester, N.Y., deld.	69.02	69.52	70.02	....
Syracuse, N.Y., deld	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S. Chicago R2	66.00	66.50	66.50	67.00
S. Chicago, Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon, Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron, Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50
Chester, Pa. P4	Nom.	Nom.	Nom.	....
Swedeland, Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark, N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy, N.Y. R2	68.00	68.50	69.00	69.50
Boston, deld.	75.20	75.70	76.20	76.70
Pittsburgh District				
Neville Island, Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKees Rocks, Pa., deld.	....	67.60	67.60	68.13
Lawrenceville, Homestead, Wilmerding, Monaca, Pa., deld.	....	68.26	68.26	69.79
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge, Pa. deld.	68.60	69.10	69.10	69.63
Midland, Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard, Ohio Y1	....	....	66.50	....
Sharpsville, Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield, Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie, Pa. I-3	66.00	66.50	66.50	67.00
Fontana, Calif. K1	75.00	75.50	....	....
Geneva, Utah C11	66.00	66.50	....	....
Granite City, Ill. G4	67.90	68.40	68.90	....
Ironton, Utah C11	66.00	66.50	....	....
Minnequa, Colo. C10	68.00	68.50	69.00	....
Rockwood, Tenn. T3	62.00	62.50‡	66.50	67.00
Toledo, Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson, Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

Calvert City, Ky. P15	$99.00
Niagara Falls, N.Y. P15	99.00
Keokuk, Iowa Open-hearth & Fdry. K2	89.00
Keokuk, Iowa O.H. & Fdry. 12½ lb piglets, 16% Si, K2	92.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Birdsboro, Pa. B10 (Phos. 0.075% max)	$73.00
Lyles, Tenn. T3 (Phos. 0.035% max)	73.00
Rockwood, Tenn. T3 (Phos. 0.035% max)	73.00
Buffalo H1 (Intermediate) (0.036-0.075% max)	71.50
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Neville Island, Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Swedeland, Pa. A3 (Intermediate) (Phos. 0.036-0.075% max)	73.00
Troy, N.Y. R2 (Phos. 0.075% max)	73.00

Steel Service Center Products

Representative prices, cents per pound, f.o.b. warehouse, for 2000 lb items (except stainless) ordered by themselves. Prices will vary with total weight of the order or weight of the individual items or both. Base quantities for stainless sheets: 8000 lb, except in Chicago, New York, Boston, Los Angeles, and San Francisco, 10,000 lb. City delivery charges are 15 cents per 100 lb except: Denver, 20 cents; Baltimore, Boston, New York, Philadelphia, San Francisco, 10 cents; Atlanta, Birmingham, Dallas, Houston, Los Angeles, Seattle, no charge.

	SHEETS				STRIP	BARS			STRUCTURAL	PLATES	
	Hot Rolled	Cold Rolled	Galv.	Stainless Type 302	Hot Rolled	H.R. Rounds	C.F. Rounds	H.R. Alloy 4140	SHAPES	Carbon	Floor
Atlanta	9.37	10.61	11.83	....	10.85	9.53	13.24	....	9.94	9.73	11.16
Baltimore	8.27	8.66	10.06	....	8.28	8.95	11.90	16.38	9.53	8.84	10.43
Birmingham	9.43	10.20	10.46	....	10.41	8.26	13.14	16.76	8.47	8.41	10.05
Boston	9.67	10.58	11.77	53.50	12.16	9.77	13.35	16.59	10.16	9.62	11.08
Buffalo	8.65	9.80	11.25	55.98	11.00	8.75	11.45	16.30	9.15	8.65	11.10
Charlotte, N. C.	9.87	11.22	10.30	....	10.86	9.67	12.68	....	9.88	9.82	11.46
Chicago	8.57	10.20	10.15	52.00	10.74	8.55	10.65	15.95	8.91	8.41	10.68
Cincinnati	8.74	10.26	10.20	65.30	11.06	8.87	11.53	16.27	9.47	8.79	11.01
Cleveland	8.57	9.98	11.24	56.18	10.86	8.66	11.25	16.06	9.30	8.65	10.92
Dallas	9.62	10.43	12.59	....	11.18	9.03	12.98	16.95	9.26	9.35	11.00
Detroit	8.83	10.46	10.50	52.00	11.11	8.86	11.01	16.23	9.47	8.78	10.94
Denver	9.41	11.77	12.11	....	9.86	10.10	11.47	....	10.02	9.69	11.83
Houston	9.22	10.03	12.19	52.00	10.78	8.63	13.10	16.55	8.86	8.95	10.60
Indianapolis	9.01	10.64	10.59	....	11.18	8.99	11.09	16.39	9.35	8.85	11.12
Kansas City	9.21	10.87	11.35	....	10.87	9.31	11.57	15.72	9.80	9.10	....
Los Angeles	9.59	11.29	12.20	61.27	11.29	9.67	14.20	17.35	10.54	9.82	11.79
Memphis, Tenn.	9.84	10.05	....	....	11.24	9.92	12.74	....	10.33	10.12	11.41
Milwaukee	8.71	10.34	10.29	....	10.88	8.69	10.89	16.09	9.13	8.55	10.82
Moline, Ill.	9.24	10.70	11.45	....	10.90	9.34	11.15	16.45	9.83	9.17	10.96
Newark, N. J.	9.36	10.13	11.35	....	11.46	9.74	13.25	16.40	10.20	9.51	11.05
New York	9.36	10.13	11.35	52.98	11.46	9.74	13.25	16.40	10.20	9.51	11.05
Philadelphia	8.85	10.00	10.89	52.71	10.85	9.25	11.95	16.38	9.45	9.20	10.45
Pittsburgh	8.57	9.98	11.13	52.00	10.84	8.55	11.25	15.95	8.91	8.41	10.68
Portland, Oreg.	10.20	12.05	12.35	....	12.20	10.20	16.65	17.80	10.80	10.35	12.50
St. Louis	8.77	10.58	10.53	....	10.94	8.77	11.28	16.33	9.14	8.62	10.91
St. Paul	8.84	9.59	10.84	....	11.01	8.82	11.49	16.54	9.18	8.68	10.44
San Francisco	10.17	11.69	11.45	54.00	11.78	10.07	15.10	17.25	10.49	10.38	12.47
Seattle	10.51	11.57	12.50	54.02	11.95	9.94	16.20	17.80	10.65	10.10	12.73
Spokane, Wash.	10.36	11.42	12.35	54.02	11.80	9.79	16.20	17.80	10.50	9.95	12.58

Specifications: Hot rolled sheet, sheared edge, 10 Ga. & 36 x 96-120 in.; cold rolled sheets, 20 Ga. & 36 x 96-120 in.; galvanized sheets, 10 Ga. x 36 x 120 in. except Dallas and Houston, 10 Ga. x 48 x 120 in.; stainless, 16 Ga. x 36 in.; hot rolled strip, ⅛ in. x 1 in.; hot rolled carbon bars, rounds, ⅝ in.—1¼ in., M1020; cold finished bars, 1 in., C1018; hot rolled alloy bars, 4140 annealed, 1⅝ in.—2⅞ in. rounds; structural shapes, I beams, 6 x 12½ in.; carbon plates, sheared, through ½ in. x 84 in.; floor plates, ¼ in. x 36 in.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Canon City, Colo., $183; Curtner, Calif., $185.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000 pieces*)

Dry-Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Nario, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.00.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

*—9 in. x 4½ x 2.50 straights.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid, $28-$28.50; barge, Brownsville, Tex., $30-$31.

Canadian Steel

(Cents per pound, f.o.b. mill, except as otherwise noted)

Billets, Blooms & Slabs:
Carbon, Forging Quality (net ton) $97.00
Alloy (net ton) ... 115.00

Wire Rods:
Carbon 5/16" to under ¼ in. ... 5.30
Carbon, ¼ in. to 47/64 in. ... 5.70
Alloy ... 6.40
Wire (Carload lots) .. 8.40

Bars & Small Shapes:
Carbon, merchant quality ... 5.40
Carbon, special quality ... 5.85
Alloy ... 6.40

Bar Mill Bands:
Carbon ... 5.40
Alloy ... 8.05

Structural Size Angles & Zees ... 5.40

Plates:
Carbon ... 5.45

Sheets & Coils, Hot Rolled:
Carbon Sheets ... 5.00
Carbon Strip ... 5.00

Sheets & Coils, Cold Rolled:
Carbon Sheets ... 6.35
Carbon Strip (0.080 and lighter) ... 6.35
Carbon Strip (0.081 and heavier) ... 6.65

Sheets & Coils, Galvanized:
Standard Quality .. 6.70
Culvert Quality ... 7.00

Sheets, Porcelain Enameling ... 7.45

Sheets & Coils, Electrical:
Field Grade ... 9.00
Armature Grade .. 9.50
Electrical Grade .. 10.15

Tin Mill ....(Per Base Box; Products 100 lb basis wt)
Coke Tin Plate (1.25 lb pot yield) $10.60
Electrolytic Tin Plate (0.25 lb coating) . 9.10
Black Plate 8.30

Nails, c.l. lots ....(per keg)
400 keg min. $8.15

Metal Powder

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as noted).

	Cents
Sponge Iron, domestic and foreign, 98% Fe, min. trucklots, freight allowed east of Mississippi River:	
100 mesh bags	11.50
100 mesh, pails	9.85§
40 mesh, bags	8.10††
Electrolytic Iron, Melting stock, 99.9% Fe, irreg. fragments, ⅛ in. x 1.3 in.	28.75
(In contract lots of 750 tons price is 22.75c)	
Annealed, 99.5% Fe..36.75, ton, del. east of Mississippi.	
Unannealed (99+ % Fe)	33.0
Unannealed (99+ % Fe) (minus 325 mesh) ..	58.0

	Dollars
Carbonyl Iron: 90-99.9%, 3 to 20 microns, depending on grade, 88.00-700.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 600-lb drum freight allowed, c.l. 39.80; ton lots 41.80	
Brass, 80/20, leaded (60 mesh)	39.90
Bronze, filter powder, 90/10	47.00*
Cobalt, 50 mesh	1.58
Copper, all types 15.25*	
Lead	7.50*
Manganese, minus 35 mesh	1.00
Nickel, all types .. 0.78-1.06	
Nickel-Silver	60.70
Solder	15.00*
Stainless Steel, 304	89.00
Stainless Steel, 316	$1.07
Steel, AISI 4650	32.00
Tin	14.00*
Zinc	25.90
Cobalt: 98.5%, minus 100-300 mesh...	1.57-1.58
99.5%, below 5 microns	2.32
Tungsten: Carbon and hydrogen reduced, 98.8% min., minus 65 mesh	nom.**
Molybdenum	4.35

*Plus cost of metal. ‡Depending on mesh. §Cutting and scarfing grades. **Depending on price of ore. ††Welding grade.

Ores

Lake Superior Iron Ore

(Prices effective for the 1960 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer $11.60
Lump, ½ in. and up 12.85
Fines, under ½ in. 10.72
Mesabi nonbessemer 11.45
Old Range bessemer 11.85
Old Range nonbessemer 11.70
Open-hearth lump 12.70
High phos. 11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1960, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, concentrates ..... nom.

Foreign Iron Ore

Cents per unit

Swedish basic, 65%, c.i.f. Atlantic ports 23.00†
Chilean, 62-65%, c.i.f. Atlantic ports .. 22.00
Brazilian, 68.5%, f.o.b. vessel, Victoria, per ton $11.50

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality $19.75-20.00
Domestic, concentrates, f.o.b. milling points 22.00-23.00

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian, 85-90c, nom. per long ton unit, c.i.f. U. S. ports, duty for buyer's account.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1 ..... $34.00-35.00†
48% no ratio ..... 25.00-26.00†

South African Transvaal

44% no ratio ..... 18.75†
48% no ratio ..... 24.00-26.00†

Turkish

48% 3:1 ..... 36.00-37.00†

Domestic

Rail nearest seller

18% 3:1 ..... 30.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked $1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard
55-60% $2.50-2.80
60-65% 2.80-3.20

Vanadium Ore

Cents per lb V_2O_5

Domestic 31.00

†Nominal.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace $14.75-15.25
Connellsville, Pa., foundry 18.00-18.50

Oven Foundry

Birmingham, ovens $30.35
Cincinnati, deld. 33.34
Buffalo, ovens 32.00
Chattanooga, Tenn., ovens 30.80
Detroit, ovens 32.00
Pontiac, Mich., deld. 33.95
Saginaw, Mich., deld. 35.53
Erie, Pa., ovens 32.00
Everett, Mass., ovens: New England, deld. 33.55*
Indianapolis, ovens 31.25
Ironton, Ohio, ovens 30.50
Cincinnati, deld. 33.54
Kearny, N. J., ovens 31.25
Milwaukee, ovens 32.00
Neville Island (Pittsburgh), Pa., ovens. 30.75
Painesville, Ohio, ovens 32.00
Cleveland, deld. 34.19
Philadelphia, ovens 31.00
St. Louis, ovens 33.00
St. Paul, ovens 31.25
Chicago, deld. 34.68
Swedeland, Pa., ovens 31.00
Terre Haute, Ind., ovens 31.25

*Within $5.15 freight zone from works.

Coal Chemicals

(Representative prices)

Cents per gal f.o.b. tank cars or tank trucks, plant.
Pure benzene 31.00
Xylene, industrial grade 29.00
Creosote 24.00
Naphthalene, 78 deg. 6.00
Toluene, one deg. (deld. east of Rockies) 25.00
Cents per lb, f.o.b. tank cars or tank trucks, deld.
Phenol, 90 per cent grade 14.75
Per net ton bulk, f.o.b. cars or trucks, plant.
Ammonium sulfate, regular grade $32.00

Imported Steel

(Base per 100 lb, landed, duty paid; based on current ocean rates with any rise for buyer's acc't. Source of shipment: Western Europe)

	North Atlantic	Great Lakes	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305 ..	$5.65	$5.55	$5.55	$5.40	$5.75
Bar Size Angles	5.85	5.75	5.75	5.60	5.95
Structural Angles	5.65	5.55	5.55	5.40	5.75
I-Beams	5.60	5.50	5.50	5.35	5.70
Channels	5.60	5.50	5.50	5.35	5.70
Plates (basic bessemer)	5.85	5.75	5.75	5.60	5.95
Sheets, H.R.	Nom.	Nom.	Nom.	Nom.	Nom.
Sheets, Galvanized, 20 Ga., 36 in. x 96 in. ...	Nom.	Nom.	Nom.	Nom.	Nom.
Sheets, Galv. (in coils) 20 Ga., 48 in. wide ..	Nom.	Nom.	Nom.	Nom.	Nom.
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.70	25.14	24.85	24.85	26.02
Barbed Wire (†)	6.15	6.05	6.05	5.90	6.25
Merchant Bars	5.85	5.75	5.75	5.60	5.95
Hot-Rolled Bands	6.20	6.10	6.10	5.95	6.30
Wire Rods, Thomas Commercial No. 5	6.40	6.35	6.20	6.20	6.60
Wire Rods, O. H., No. 5	6.55	6.50	6.35	6.35	6.70
Bright Common Wire Nails (§)	7.30	7.20	7.20	7.05	7.40

†Per 82 lb net reel. §Per 100-lb keg. 20d nails and heavier.

ELECTRIC FURNACE STEEL CASTINGS

are engineered to *YOUR* specific requirements

"C" steel castings are CLEAN steel castings of uniform structure that will minimize machining and assembly costs, permit of greater freedom and efficiency of design and add to your product the recognized strength, endurance and desirability of steel. C steel castings, foundry engineered from pattern to finished casting can be had in

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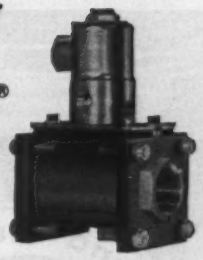

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Los Angeles ASTE Tool Show, Nov. 14-18, Booth 547

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AX-29

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This 2-KW **Sonogen®** ultrasonic-cleaning installation was designed in collaboration with the Lycoming Division of Avco to handle the toughest jobs in the shop. Planned originally for close-tolerance gas-turbine parts whose complex geometry and heavy scale handicapped old-fashioned cleaning methods, it now works three shifts on air diffusers (photo) and other difficult parts pre-selected for efficient **Sonogen®** cleaning. Repeated cycling in conventional cleaning baths failed to remove all scale, oxide and soil; now the fast, efficient scrubbing action of **Sonogen®** cleans every surface thoroughly without re-cycling / Your problem may be different from Lycoming's, but the solution is probably the same — a **Sonogen®** ultrasonic-cleaning system engineered for your needs. Write today, giving us full details.

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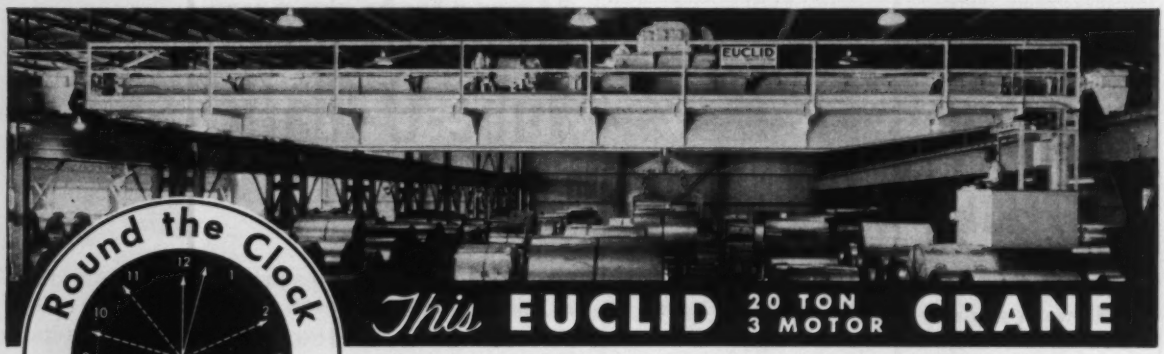

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Expedites Steel Coil Handling IN and OUT of this STEEL WAREHOUSE and PROCESSING PLANT

Yes, practically anytime of the day or night you'll find a man at the controls of this double girder, cab-operated, overhead traveling crane. With an impressive span of 60′ it covers every square foot of one of the large storage bays at the Euclid, Ohio, plant of Chesterfield Steel Service Company. Ease of precision control and rapid acceleration and braking of all travel movements assure an unprecedented coil handling volume.

Built for Class 4 service, this crane is one of seven Euclid cranes in operation in this warehouse.

Euclid builds cranes in a wide range of spans and capacities for all purposes.

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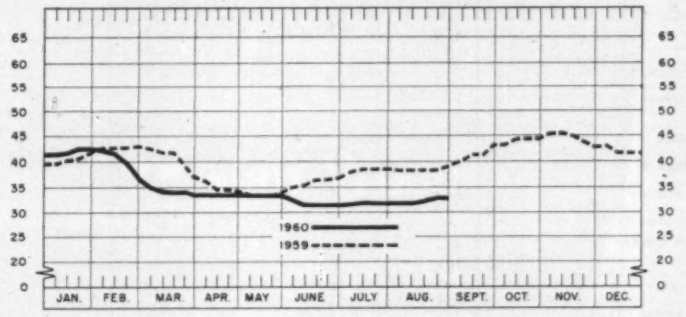
THE EUCLID CRANE & HOIST CO. 1365 Chardon Road • Cleveland 17, Ohio

REQUEST A SURVEY of your present facilities by a QUALIFIED EUCLID REPRESENTATIVE

STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania—Compiled by STEEL.



Aug. 31 1960	Week Ago	Month Ago	Year Ago	July Avg.
$32.67	$32.67	$32.00	$39.00	$31.63

Scrapmen Still Awaiting Pickup

Sluggish steel operations put damper on market hopes for September revival in mill buying. Prices holding, with auto list bids little changed from month ago

Scrap Prices, Page 116

● **Pittsburgh** — No. 2 bundles are up $1 a ton on a substantial purchase by a leading consumer. The local plant of GM's Fisher Body Div. sold No. 1 factory bundles to a dealer for an estimated $36.16 a ton (vs. $36.04 last month). No. 2 heavy melting is up $1 on appraisal, but all other grades are unchanged.

● **Philadelphia** — Prices are unchanged, with domestic demand dull and foreign requirements active. No immediate change in the market is expected.

● **New York** — Brokers' buying prices continue steady. Export demand is holding up, and to considerable degree, is offsetting the lag in domestic trading.

● **Chicago**—The soft tone of the market was confirmed early last week: The 9000 ton offering of No. 1 factory bundles to be produced this month by a district auto stamping plant was sold at a bid equivalent to $37.47 a ton, delivered Chicago. Some 12,000 tons offered by a second stamper are expected to go at the same figure. A month ago, the successful bids for the 16,000 ton output of the district's two stamping plants ranged from $37.20 to $37.96, Chicago delivered. In general, prices on the dealer steel grades are holding, but the cast iron grades are off $1 a ton.

● **Cleveland**—With bids on month-end automotive lists down about 50 cents from a month ago, the market generally is easier. Mill buying continues sluggish, and scrapmen now don't anticipate any improvement in the situation until next month. They had been pointing for September, but with steelmaking operations at 53 per cent in Cleveland and only 44 per cent in Youngstown, prospects are not encouraging for the next several weeks.

● **Buffalo**—Limited mill buying is reported. Supplies are more than adequate for current demand, and some primary scrap is moving out of the district for export via the St. Lawrence Seaway. Dealers anticipate little change in prices this month because mill operations are expected to hold.

● **Detroit**—Lack of demand and increased tonnages offered in the monthend auto lists are forcing down local prices. Indications are that successful bids on the auto lists may be somewhat lower than those a month ago.

● **St. Louis**—Except for a reduction of $1 on No. 1 busheling, now quoted $32, brokers' buying prices are unchanged. There are no indications of an early change in the market.

● **Cincinnati**—Prices on the principal grades of steelmaking scrap are unchanged. September shipment purchases by a local mill are limited—and at levels prevailing a month ago. Brokers are still offering $26.50-$27.50 on No. 1 heavy melting.

● **Birmingham**—Dealers report the market for electric furnace material is stronger. Brokers are quoting $32-$33 on 3 ft and under material and $35-$36 on 2 ft and under. One dealer said he hasn't booked any contracts at the reported prices but that brokers are quoting those levels. Foundry scrap seems to be getting scarcer. Structurals and plates are quoted $37-$38 this week.

● **Houston**—Prices are unchanged in a quiet market. Cutbacks in operations at Lone Star Steel Co., starting Aug. 26, have dampened hopes of an early September pickup in demand. Dealers' scrap intake is somewhat improved, but demand is not showing any change.

● **San Francisco** — Little scrap is moving; even exporting has slowed down. Dealers are awaiting the placing of new Japanese orders for next quarter. No price changes are indicated.

● **Los Angeles**—Prices quoted on most scrap items are nominal, with domestic consumption limited. The end of the labor tieup cleared the San Pedro docks of metal awaiting shipment to Japan. Negotiations with the Japanese for next quarter tonnage may put a little life into the market.

● **Seattle**—While local sellers report no change in prices, the general market situation is considered

(*Please turn to Page* 121)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, Aug. 31, 1960. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Aug. 31	$32.67
Aug. 24	32.67
July Avg.	31.63
Aug. 1959	38.64
Aug. 1955	43.97

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	*27.00-28.00*
No. 1 dealer bundles	33.00-34.00
No. 2 bundles	*25.00-26.00*
No. 1 busheling	31.00-32.00
No. 1 factory bundles	*38.00-39.00*
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short turnings	20.00-21.00
Cast iron borings	19.00-20.00
Cut structurals:	
2 ft and under	37.00-38.00
3 ft and under	36.00-37.00
Heavy turnings	27.00-28.00
Punchings & plate scrap	39.00-40.00
Electric furnace bundles	37.00-38.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Stove plate	34.00-35.00
Unstripped motor blocks	25.00-26.00
Clean auto cast	37.00-38.00
Drop broken machinery	47.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 2 ft and under	50.00-51.00
Rails, 18 in. and under	51.00-52.00
Random rails	46.00-47.00
Angles, splice bars	45.00-46.00
Railroad specialties	47.00-48.00
Rails, rerolling	53.00-54.00

Stainless Steel Scrap

18-8 bundles & solids	175.00-180.00
18-8 turnings	95.00-100.00
430 bundles & solids	90.00-95.00
430 turnings	50.00-55.00

CHICAGO

No. 1 hvy melt., indus.	32.00-33.00
No. 1 hvy melt., dealer	30.00-31.00
No. 2 hvy melting	28.00-29.00
No. 1 factory bundles	37.00-38.00
No. 1 dealer bundles	31.00-32.00
No. 2 bundles	20.00-21.00
No. 1 busheling, indus.	32.00-33.00
No. 1 busheling, dealer	30.00-31.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	17.00-18.00
Shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Cut structurals, 3 ft	35.00-36.00
Punchings & plate scrap	37.00-38.00

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Stove plate	*35.00-36.00*
Unstripped motor blocks	*33.00-34.00*
Clean auto cast	*46.00-47.00*
Drop broken machinery	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
R.R. malleable	*45.00-46.00*
Rails, 2 ft and under	49.00-50.00
Rails, 18 in. and under	50.00-51.00
Angles, splice bars	43.00-44.00
Axles	53.00-54.00
Rails, rerolling	53.00-54.00

Stainless Steel Scrap

18-8 bundles, solids	175.00-180.00
18-8 turnings	90.00-95.00
430 bundles & solids	85.00-90.00
430 turnings	45.00-50.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*23.00-24.00*
No. 2 heavy melting	*11.00-12.00*
No. 1 bundles	*26.00-27.00*
No. 2 bundles	*12.50-13.50*
No. 1 busheling	*22.00-23.00*
Machine shop turnings	*9.00-10.00*
Mixed borings, turnings	*8.00-9.00*
Shovel turnings	*7.00-8.00*

Cast Iron Grades

No. 1 cupola	*34.00-35.00*
Stove plate	*27.00-28.00*
Heavy breakable	*27.00-28.00*
Unstripped motor blocks	*19.00-20.00*
Charging box cast	*27.00-28.00*
Clean auto cast	*42.00-43.00*

CLEVELAND

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	23.00-24.00
No. 1 factory bundles	*33.50-34.50*
No. 1 bundles	31.00-32.00
No. 2 bundles	17.00-18.00
No. 1 busheling	31.00-32.00
Machine shop turnings	12.00-13.00
Shovel turnings	16.00-17.00
Mixed borings, turnings	16.00-17.00
Cast iron borings	16.00-17.00
Cut foundry steel	34.00-35.00
Cut structurals, plate 2 ft and under	37.00-38.00
Low phos. punchings & plate	31.00-32.00
Alloy free, short shovel turnings	17.00-18.00
Electric furnace bundles	33.00-34.00†

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	33.00-34.00
Heavy breakable cast	30.00-31.00
Stove plate	39.00-40.00
Unstripped motor blocks	32.00-33.00
Brake shoes	35.00-36.00
Clean auto cast	50.00-51.00
Burnt cast	40.00-41.00
Drop broken machinery	50.00-51.00

Railroad Scrap

R.R. malleable	45.00-46.00
Rails, 2 ft and under	50.00-51.00
Rails, 18 in. and under	51.00-52.00
Rails, random length	44.00-45.00
Cast steel	38.00-39.00
No. 1 railroad cast	46.00-47.00
Railroad specialties	44.00-45.00
Angles, splice bars	46.00-47.00
Rails, rerolling	53.00-54.00

Stainless Steel Scrap (Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	175.00-180.00
18-8 turnings	75.00-80.00
430 clips, bundles, solids	90.00-95.00
430 turnings	20.00-30.00

YOUNGSTOWN

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	25.00-26.00
No. 1 busheling	33.00-34.00
No. 1 bundles	33.00-34.00
No. 2 bundles	20.00-21.00
Machine shop turnings	15.00-16.00
Shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	35.00-36.00
Electric furnace bundles	35.00-36.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.50-35.50

BUFFALO

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	24.00-25.00†
No. 1 bundles	29.00-30.00
No. 2 bundles	21.00-22.00
No. 1 busheling	29.00-30.00
Shovel turnings	16.00-17.00
Machine shop turnings	12.00-13.00
Cast iron borings	14.00-15.00
Low phos. structurals and plate, 2 ft and under	37.00-38.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	40.00-41.00
No. 1 machinery	47.00-48.00

Railroad Scrap

Rails, random lengths	41.00-42.00
Rails, 3 ft and under	47.00-48.00
Railroad specialties	40.00-41.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	26.50-27.50
No. 2 heavy melting	22.50-23.50
No. 1 bundles	26.50-27.50
No. 2 bundles	17.50-18.50
No. 1 busheling	26.50-27.50
Machine shop turnings	10.00-11.00
Mixed borings, turnings	10.00-11.00
Shovel turnings	13.00-14.00
Cast iron borings	13.00-14.00
Low phos. 18 in.	35.00-36.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Heavy breakable cast	31.00-32.00
Charging box cast	35.00-36.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00
Rails, 18 in. and under	51.00-52.00
Rails, random lengths	43.00-44.00

PHILADELPHIA

No. 1 heavy melting	35.00
No. 2 heavy melting	31.00
No. 1 bundles	36.00
No. 2 bundles	24.00-25.00
No. 1 busheling	36.00
Electric furnace bundles	37.00
Mixed borings, turnings	17.00†
Shovel turnings	21.00
Machine shop turnings	15.00
Heavy turnings	28.00†
Structurals & plates	38.00-40.00
Couplers, springs, wheels	40.00
Rail crop, 2 ft & under	51.00-52.00

Cast Iron Grades

No. 1 cupola	39.00
Heavy breakable cast	40.00
Drop broken machinery	50.00
Malleable	46.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	21.00-22.00
No. 1 bundles	31.00-32.00
No. 2 bundles	16.00-17.00
Machine shop turnings	7.00-8.00†
Mixed borings, turnings	8.00-9.00†
Shovel turnings	9.00-10.00†
Low phos. structurals & plates	38.00-39.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Unstripped motor blocks	25.00-26.00
Heavy breakable	30.00-31.00

Stainless Steel

18-8 sheets, clips, solids	165.00-170.00
18-8 borings, turnings	80.00-85.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	70.00-75.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*25.00-26.00*
No. 2 heavy melting	19.00-20.00
No. 1 bundles	*25.00-26.00*
No. 1 busheling	*25.00-26.00*
Machine shop turnings	6.00-7.00
Shovel turnings	*9.00-9.50*
No. 1 cast	39.00-40.00
Mixed cupola cast	33.00-33.50
No. 1 machinery cast	40.00-42.00

BIRMINGHAM

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	24.00-25.00
No. 1 bundles	29.00-30.00
No. 2 bundles	20.00-21.00
No. 1 busheling	31.00-32.00
Cast iron borings	10.00-11.00
Machine shop turnings	16.00-17.00
Shovel turnings	18.00-19.00
Bar crops and plate	37.00-38.00
Structurals & plate	*37.00-38.00*
Electric furnace bundles	32.00-33.00
Electric furnace:	
3 ft and under	*32.00-33.00*
2 ft and under	*35.00-36.00*

Cast Iron Grades

No. 1 cupola	46.00-47.00
Stove plate	46.00-47.00
Unstripped motor blocks	35.00-36.00
No. 1 wheels	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	31.00-32.00
Rails, 18 in. and under	45.00-46.00
Rails, random lengths	39.00-40.00
Angles, splice bars	39.00-40.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	31.00
No. 2 heavy melting	28.00
No. 1 bundles	33.00
No. 2 bundles	19.00
No. 1 busheling	*32.00*
Machine shop turnings	9.00
Shovel turnings	11.00

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	36.00
Heavy breakable cast	34.00
Unstripped motor blocks	36.00
Clean auto cast	44.00
Stove plate	36.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00
Rails, random lengths	37.00
Rails, rerolling	51.00
Rails, 18 in. and under	41.00
Angles, splice bars	41.00

HOUSTON

(Brokers' buying prices; f.o.b. car)

No. 1 heavy melting	31.00
No. 2 heavy melting	29.00
No. 2 bundles	18.00
Machine shop turnings	11.00-12.00
Low phos. plate & structurals	38.00-39.00

Cast Iron Grades

No. 1 cupola	34.00-34.50
Heavy breakable	25.00
Foundry malleable	31.00†
Unstripped motor blocks	28.00-28.50

Railroad, Scrap

No. 1 R.R. heavy melt.	34.00-35.00

LOS ANGELES

(For export)

No. 1 heavy melting	32.00
No. 2 heavy melting	*29.00*
No. 1 bundles	27.00
No. 2 bundles	*18.00*
Machine shop turnings	17.00†
Shovel turnings	*15.00†*
Cast iron borings	*15.00†*
Cut structurals and plate 1 ft and under	*44.00*

Cast Iron Grades

No. 1 cupola	*40.00†*

Railroad Scrap

No. 1 R.R. heavy melt.	*39.00†*

PORTLAND, OREG.

(Prepared, f.o.b. car)

No. 1 heavy melting	35.00-38.00
No. 2 heavy melting	32.00-35.00
No. 2 bundles	20.00
Shovel turnings	15.00
Electric furnace bundles	48.00

Cast Iron Grades

No. 1 cupola	35.00
Heavy breakable	33.00
Unstripped motor blocks	33.00
Stove plate (f.o.b. plant)	20.00

SEATTLE

(Prepared, f.o.b. car)

No. 1 heavy melting	38.50
No. 2 (prepared for shears)	30.00
No. 1 hvy (unprepared)	35.00
No. 2 heavy melting	35.50
No. 2 hvy (unprepared)	33.00
No. 1 (prepared for shears)	33.00
No. 2 bundles	23.00
Shovel turnings	15.00
Electric furnace bundles	48.00

Cast Iron Grades

No. 1 cupola	35.00
Heavy breakable cast	36.00
Unstripped motor blocks	33.00
Stove plate (f.o.b. plant)	20.00

SAN FRANCISCO

No. 1 heavy melting	34.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	20.00
Machine shop turnings	14.00
Mixed borings, turnings	14.00
Cast iron borings	14.00
Heavy turnings	14.00
Shovel turnings	14.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	48.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

(Brokers' buying prices; net tons)

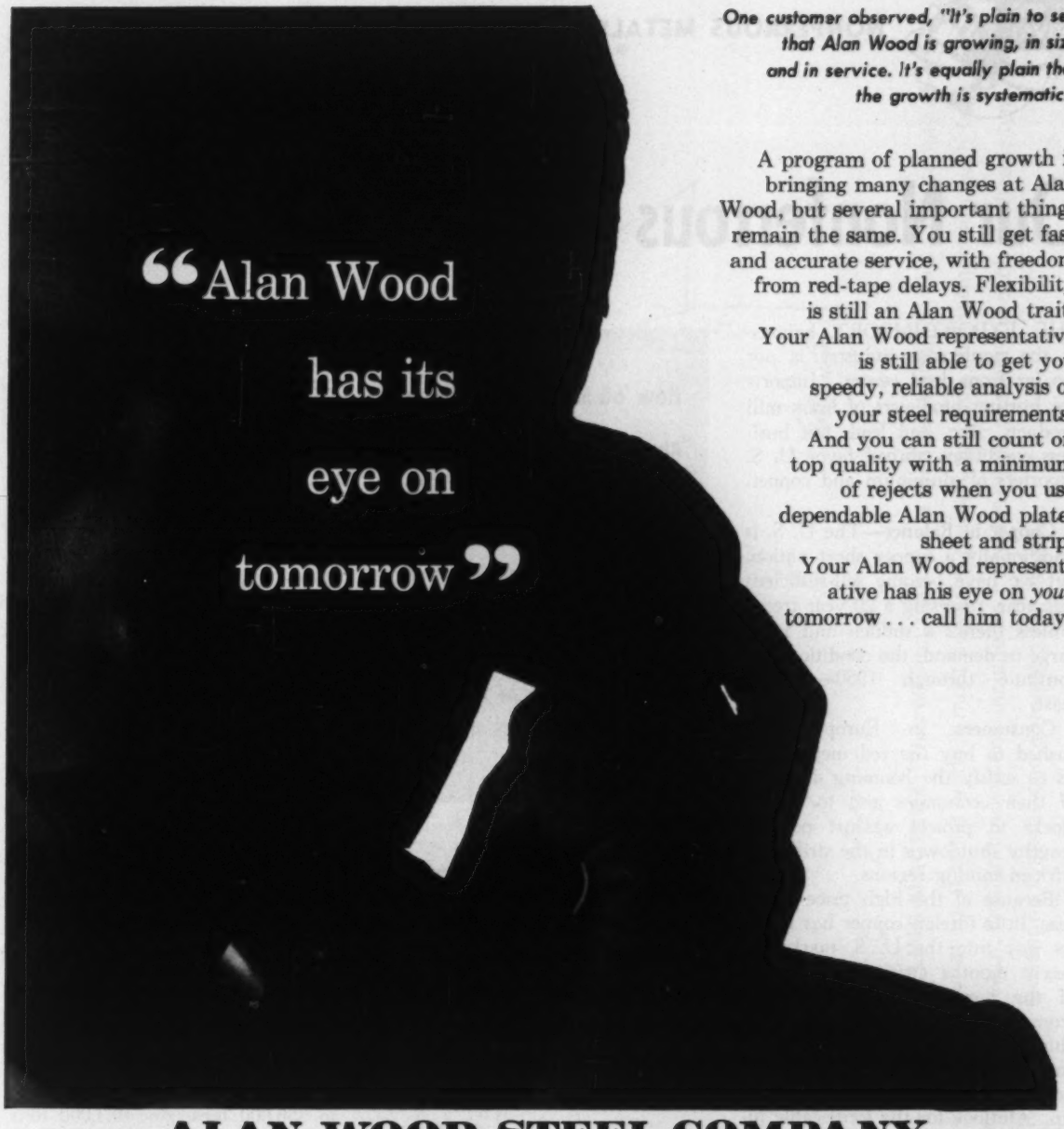
No. 1 heavy melting	25.80
No. 2 hvy melt, 2 ft & under	25.50
No. 1 bundles	25.80
No. 2 bundles	19.00
Mixed steel scrap	16.00
Mixed borings, turnings	12.00
Busheling, new factory:	
Prepared	25.50
Unprepared	20.45
Shovel turnings	12.00

Cast Iron Grades‡

No. 1 machinery cast	43.00

†Nominal.

‡F.o.b. Hamilton, Ont.



One customer observed, "It's plain to see that Alan Wood is growing, in size and in service. It's equally plain that the growth is systematic."

A program of planned growth is bringing many changes at Alan Wood, but several important things remain the same. You still get fast and accurate service, with freedom from red-tape delays. Flexibility is still an Alan Wood trait. Your Alan Wood representative is still able to get you speedy, reliable analysis of your steel requirements. And you can still count on top quality with a minimum of rejects when you use dependable Alan Wood plate, sheet and strip. Your Alan Wood representative has his eye on *your* tomorrow . . . call him today!

ALAN WOOD STEEL COMPANY

Conshohocken, Pa. • **STEEL PRODUCERS WITH THE CUSTOMER IN MIND**

DISTRICT OFFICES AND REPRESENTATIVES: Philadelphia • New York • Los Angeles • Boston • Atlanta Cincinnati • Cleveland • Detroit • Houston • Pittsburgh • Richmond • St. Paul • San Francisco • Seattle Montreal, Toronto and Vancouver, Canada: A. C. Leslie & Co., Limited

Our Nonferrous Markets Shift

THE EXPORT-IMPORT balance of the nonferrous industry is not too far from dead center. Imports are hurting producers of brass mill products, zinc, and lead, but business conditions abroad favor U. S. exporters of aluminum and copper.

How '60 Shapes Up for U. S.

Aluminum	net exporter.
Copper	net exporter.
Magnesium	net exporter.
Lead	net importer.
Zinc	net importer.
Cobalt	net importer.
Platinum	net importer.
Mercury	net importer.
Tin	import all needs.
Nickel	import all needs.

• **Copper in Balance**—The U. S. is traditionally a copper short nation, but we have become self-sufficient this year, reversing a 20 year trend. Unless there's a sudden and hefty surge in demand, the condition will continue through 1960—at the least.

Consumers in Europe have rushed to buy the red metal from us to satisfy the booming demands of their economies and to lay in stocks to protect against possible lengthy shutdowns in the strife-torn African mining regions.

Because of the high prices overseas, little foreign copper has found its way into the U. S. market in recent months (with the exception of the normal amounts imported from Chile for refining here and shipment to Europe). If the European market falters and the U. S. goes into a boom, imports will pick up. Outlook for the foreseeable future: There seems to be little likelihood that imports will reach the 250,000 ton level of several years ago.

• **Brass Mills Still Squeezed**—Imports of brass mill products continue to pinch domestic producers.

During the first half, imports ran a little slower than the year ago pace—93.5 million lb compared with 199 million lb in all of 1959. Yet the impact on the market is even greater this year because business is off. (Domestic shipments hit 820.5 million lb in the first half compared with 1.9 billion lb in all of last year.) With imports taking a bigger percentage of the market this year, U. S. companies have lowered their quotations to be more competitive.

Exports continue to be depressed —8 million lb in the first half compared with a 1959 total of 16 million lb.

Mills don't see much relief from the import tidal wave until they get some form of additional tariff.

• **Exports Favor Aluminum**—The export-import balance has shifted in the U. S. aluminum industry's favor this year, giving producers a much needed assist at a time when domestic demand is down. In the first half, crude aluminum exports hit an all-time six-month high of 161,000 tons vs. 34,550 tons in the same period last year; exports of semifabricated shapes jumped to 8850 tons from 5400 tons in 1959; and scrap exports took a whopping leap to 39,950 tons vs. 11,400 tons in the year ago period.

Imports have slumped. In the first half, imports of crude aluminum fell to 74,700 tons, down 28 per cent from the 1959 mark. Imports of semifabricated products were 22,350 tons, a 15 per cent drop from last year.

The basic reason behind the shift: Demand is soaring in Europe and Japan, but U. S. demand has fallen behind availibility.

Forecasts are that the import-export pattern will stay about the same through the year. Looking farther ahead: Producers say they are in the world market to stay. Yet they and the independent fabricators aren't getting cocky because imports have slumped a little. Here's why: Imports of fabricated goods jumped 80 per cent in 1959. They are still big enough to affect domestic prices, and they could spurt again if U. S. tariffs are pared down.

• **Lead-Zinc Problems**—By necessity, the U. S. is a net importer of lead and zinc. In recent years, too much foreign metal flowed into domestic markets, weakening prices and forcing the closedown of some mines. Result: In the fall of 1958, the federal government instituted a system of quotas which limit yearly imports. Lead imports are limited to 350,000 tons, zinc 483,000 tons.

While quotas have helped, they've never been popular.

As STEEL went to press, two bills were before Congress. One would grant a subsidy payment to small miners; the other would hike import duties on the two metals.

One of the biggest worries of domestic lead-zinc people: The step-up in imports of fabricated products —they aren't restricted by quotas.

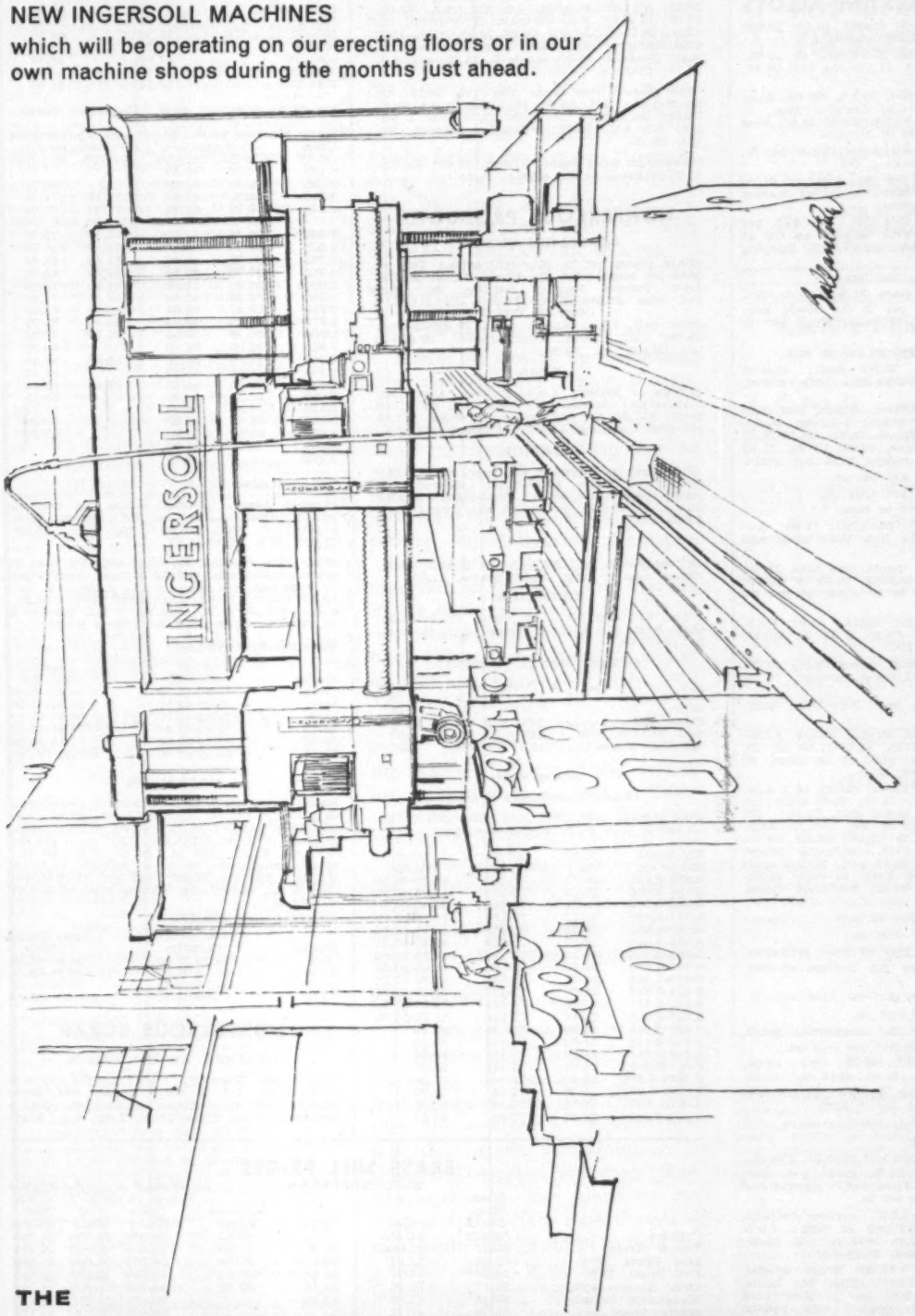
Imports of some lead fabricated products have jumped tenfold since quotas went into effect. Hardest hit: Oxides and pigments, pipe and sheets, solder. Trade sources estimate imports of some lead products now account for 8 to 10 per cent of domestic sales.

NEW AT INGERSOLL....

This is one of a number of

NEW INGERSOLL MACHINES

which will be operating on our erecting floors or in our own machine shops during the months just ahead.



A NEW 14 FT. ADJUSTABLE RAIL MILLING MACHINE: This 600-ton machine is the latest addition to a large family of new Ingersoll milling machines in use in our shop. It is the world's most powerful general purpose milling machine, with four milling heads ranging from 100 to 250 hp. each. Design innovations include an individual feed system for each rail head, temperature control of spindles, "Read Out" measuring systems and automatic rail leveling.

THE

INGERSOLL

MILLING MACHINE COMPANY ROCKFORD, ILLINOIS

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, 50 lb ingots, 26.00, 30,000 lb or more, f.o.b. customer custody.

Aluminum Alloy: No. 13, 25.90; No. 43, 26.20; No. 195, 30.70; No. 214, 31.50; No. 356, 26.80, 50 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 25.00-26.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $70.00 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $65 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.50 per lb deld.

Cobalt: 99+%, $1.50 per lb for 500-lb keg; $1.52 per lb for 100 lb case; $1.57 per lb under 100 lb.

Columbium: Powder, $55-85 per lb nom.

Copper: Electrolytic, 33.00 deld.; custom smelters, 33.00; lake, 33.00 deld.; fire refined, 32.75 deld.

Germanium: First reduction, ingots, less than 1 kg, 36.00-37.50 per gram; 1-10 kg, 30.50-32.00 per gram; 10 kg or more, 28.10-29.99 per gram; intrinsic grade, under 10 kg, 31.95 per gram; 10 kg or more, 29.95 per gram.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-75 per troy oz nom.

Lead: Common, 11.80; chemical, 11.90; corroding, 11.90, St. Louis. New York basis, add 0.20.

Lithium: 1 lb or 2 lb ingots, less than 24 lb, $11 per lb f.o.b. Minneapolis; 24-99 lb, $9.50; 100-499 lb, $9.25; 450 lb or more, $9 per lb, delivered.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex., 1.3 in. diam. x 12 in. sticks, 57.00 f.o.b. Madison, Ill.

Magnesium Alloy: AZ91A (diecasting), 40.75; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $208-210 per 75 lb flask.

Molybdenum: Unalloyed forging billets, 4.125-7.0 in. diam., 50-4999 lb, $8.15-11.50 per lb, depending on quantity; 5000 lb or more, $8 per lb, f.o.b. Coldwater, Mich.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, in kegs, 74.50; "F" nickel, 5 lb ingots, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. ports of entry, contained nickel, 69.60.

Osmium: $70-90 per troy oz nom.

Palladium: $24-26 per troy oz.

Platinum: $82-85 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $137-140 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $6.50-7 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Melting stock, $35 per lb; rod, $60 per lb nom; sheet, $55 per lb nom.

Tellurium: $3.50-5 per lb, 100 lb or more.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 102.25.

Titanium: Sponge, 99.3+% grade A-1, ductile (0.3% Fe max.), $1.60 per lb; grade A-2 (0.5% Fe max.), $1.50 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $3.35-4.50.

Zinc: Prime western, 13.00; brass special, 13.25; intermediate, 13.00, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 14.35; special high grade, 14.50 deld. Diecasting alloy ingot No. 3, 16.25; No. 2, 16.75; No. 5, 16.50 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $8 per lb; 100-500 lb, $7 per lb; over 500 lb, $6.50 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 26.25-28.00; No. 12 foundry alloy (No. 2 grade), 23.75-24.25; 5% silicon alloy, 0.60 Cu max., 25.00-25.25; 13 alloy, 0.60 Cu max., 25.00-25.25; 195 alloy, 26.75-27.75; 108 alloy, 24.25-24.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 25.00; grade 2, 23.75; grade 3, 22.75; grade 4, 22.25.

Brass Ingot: Red brass, No. 115, 29.25; tin bronze, No. 225, 39.50; No. 245, 34.00; high-leaded tin bronze, No. 305, 33.75; No. 1 yellow, No. 405, 23.75; manganese bronze, No. 421, 28.25.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.25; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.975, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.955, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 38.35; l.c.l., 38.98. Weatherproof, 20,000-lb lots, 38.55; l.c.l., 39.30.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $6.75-15.50; sheared mill plate, $5.25-9.00; wire, $5.55-9.50; forging billets, $3.20-4.75; hot-rolled and forged bars, $3.80-6.25.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 28.00; ribbon zinc in coils, 22.50; plates, 21.50.

ZIRCONIUM

Plate, $14.00-25.00; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	138	120	138
Strip, C. R.	124	108	138
Plate, H.R.	130	110	126
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

(Selected products and sizes)

Flat Sheets: 1100, 3003, and 5005, mill finish, 30,000 lb base f.o.b. customer custody.

Thickness Range (in.)	Width (in.)	Length Range (in.)	Price Range
0.250-0.136	24-72	72-180	45.40-48.00
0.136-0.096	24-72	72-180	45.90-48.80
0.096-0.077	24-72	72-180	46.40-50.30
0.077-0.068	24-72	72-180	46.90-52.10
0.068-0.061	24-72	72-180	46.90-55.00
0.061-0.048	24-72	72-180	47.40-57.70
0.048-0.038	24-72	72-180	47.90-60.50
0.038-0.030	24-72	72-180	48.40-65.80
0.030-0.024	24-72	72-180	48.90-67.20
0.024-0.019	24-60	72-180	49.40-59.90
0.019-0.017	24-48	72-144	50.30-57.00
0.017-0.015	24-48	72-144	51.20-58.00
0.015-0.014	24-36	72-144	52.30
0.014-0.012	24-36	72-144	53.50
0.012-0.011	24-36	72-114	54.60
0.011-0.0095	24-46	72-144	56.20
0.0095-0.0085	24-36	72-96	57.50
0.0085-0.0075	24-36	72-96	59.20
0.0075-0.007	24-36	72-96	60.80
0.007-0.006	24-36	72-96	62.50

ALUMINUM (continued)

Plates and Circles: Thickness, 0.25-3 in.; width or diam., 24-60 in.; lengths, 72-240 in., mill finish.

Alloy	Plate Base	Circle Base
1100, 3003-F	44.60	50.90
5050-F	45.70	50.50
3004-F	46.70	52.40
5052-F	47.30	53.10
6061-T6	47.80	53.90
2024-T4*	51.80	58.90
7075-T6*	60.50	67.90

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 base, 12 ft lengths

Diam (in.)*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	74.90	77.30	....	....
0.188	63.20	63.20	....	80.10
0.250	60.60	62.60	72.70	74.10
0.375	59.20	63.80	71.00	72.00
	2011-T3	2017-T451	2011-T3	2017-T451
0.500	59.20	63.80	71.00	72.00
0.625	59.20	63.80	67.80	67.90
0.750	57.70	62.00	61.60	63.80
0.875	57.70	62.00	61.60	63.80
1.000	57.70	62.00	61.60	63.80
1.125	55.30	59.50	59.50	61.50
1.250	55.30	59.50	59.50	61.50
1.375	55.30	59.50	59.50	61.50
1.500	55.30	59.50	59.50	61.50
1.625	53.00	56.70	....	59.30
1.750	53.00	56.70	58.30	59.30
1.875	53.00	56.70	....	59.30
2.000	53.00	56.70	58.30	59.30
2.250	51.50	55.00	....	59.30
2.500	51.50	55.00	....	59.30
2.750	49.90	53.20	....	59.30
3.000	49.00	53.20	....	59.30
3.250	....	53.20	....	....
3.375	....	53.20	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam., 0.375-8 in., "F" temper; 2014, 47.50-57.60; 6061, 43.50-57.60; 7075, 61.80-71.90; 7079, 66.80-76.90.

Pipe: ASA schedule 40, alloy 6063-T6, 3-40 ft lengths, plain ends, 90,000 lb base, dollars per ft. Nominal pipe sizes: 1 in., 32.00; 1¼ in., 43.40; 1½ in., 51.80; 2 in., 62.60; 3 in., 124.95; 4 in., 171.80; 5 in., 233.15; 6 in., 308.55; 8 in., 464.35; 10 in., 716.25 (3-24 ft lengths).

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
1-14	45.30-46.80	54.00-60.00
15-17	45.30-46.80	56.50-61.80
18-23	45.80-47.50	58.60-67.60
24-32	45.80-47.50	66.80-81.50
33-38	49.50-52.20	85.10-96.60
39-44	59.80-63.60	102.00-124.00

MAGNESIUM

Sheets and Plates: AZ31B standard grade, .032 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.00 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24.72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, 0.25-3.00 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	65.30-67.60	94.60-87.40
12-14	65.30-67.60	85.70-88.00
24-26	66.10-68.40	90.60-91.30
36-38	71.50-75.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire 23.00-23.50; No. 2 heavy copper and wire, 20.00-20.50; light copper, 18.00-18.50; No. 1 composition red brass, 17.00-17.25; No. 1 com-

BRASS MILL PRICES

MILL PRODUCTS a

	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	SCRAP ALLOWANCES e (Based on copper at 30.00c) Clean Heavy	Rod Ends	Clean Turnings
Copper	50.00b	54.86c	....	58.32	29.000	29.000	28.250
Yellow Brass	50.57	36.06d	50.86	54.23	22.250	21.250	20.250
Low Brass, 80%	53.53	53.22	53.82	57.09	24.750	24.500	24.000
Red Brass, 85%	54.58	54.27	54.87	58.14	25.750	25.500	25.000
Com. Bronze, 90%	56.17	55.86	56.46	59.48	26.750	26.500	26.000
Manganese Bronze	58.86	52.21	62.69	....	20.875	26.625	19.875
Muntz Metal	53.20	48.26	....	....	20.875	20.625	20.125
Naval Brass	55.12	48.68	61.43	58.78	20.750	20.500	20.000
Silicon Bronze	62.86	61.80	62.15	80.79	28.375	28.125	27.375
Nickel Silver, 10%	65.98	68.06	68.06	....	36.875	26.625	14.937
Phos. Bronze	77.44	78.19	77.69	79.37	29.875	29.625	28.625

a. Cents per lb, f.o.b. mill; freight allowed on 50 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 15.50-15.75; new brass clippings, 14.00-14.50; light brass, 10.50-10.75; heavy yellow brass, 11.50-11.75; new brass rod ends, 12.00-12.75; auto radiators, unsweated, 12.50-12.75; cocks and faucets, 13.50-14.00; brass pipe, 14.00-14.50.

Lead: Soft scrap lead, 8.00-8.25; battery plates, 3.00-3.25; linotype and stereotype, 9.00-9.50; electrotype, 8.00-8.25; mixed babbitt, 9.50-10.00.

Monel: Clippings, 23.00-24.00; old sheets, 22.00-23.00; turnings, 16.50-17.50; rods, 22.00-23.00.

Nickel: Sheets and clips, 50.00-51.00; rolled anodes, 50.00-51.00; turnings, 39.00-41.00; rod ends, 50.00-51.00.

Zinc: Old zinc, 3.00-3.50; new diecast scrap, 4.25-4.50; old diecast scrap, 2.75-3.00.

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 6.50-7.00; segregated low copper clips, 14.00-14.50; segregated high copper clips, 13.00-13.50; mixed low copper clips, 14.00-14.50; mixed high copper clips, 12.00-12.50.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.50-12.00; clean borings and turnings, 9.00-9.50; segregated low copper clips, 16.00-16.50; segregated high copper clips, 14.50-15.00; mixed low copper clips, 14.00-14.50; mixed high copper clips, 13.50-14.00.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 11.00-11.25; clean borings and turnings, 9.50-10.00; segregated low copper clips, 14.75-15.00; segregated high copper clips, 14.00-14.50; mixed low copper clips, 14.00-14.50; mixed high copper clips, 13.50-14.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 59.00; light scrap, 54.00; turnings and borings, 39.00.

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 25.25; light copper, 23.00; refinery brass (66% copper) dry copper content, 23.50-23.75.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 25.25; light copper, 23.00; No. 1 composition borings, 21.25; No. 1 composition solids, 22.00; heavy yellow brass solids, 16.75; yellow brass turnings, 15.75; radiators, 17.75.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.50.

Copper: Flat-rolled, 50.04; oval, 46.50. 5000-10,000 lb, electrodeposited, 42.00, 2000-5000 lb lots; cast, 44.50, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 120.50; 200-499 lb, 119.00; 500-999 lb, 118.50; 1000 lb or more, 118.00.

Zinc: Balls, 20.50; flat tops, 20.50; flats, 23.25; ovals, 22.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.50 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,000 lb, 61.90.

Copper Sulphate: 100-1900 lb, 16.00; 2000-5900 lb, 14.00; 6000-11,900 lb, 13.75; 12,000-22,900 lb, 13.50; 23,000 lb or more, 13.00.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,900 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 23.80; 400-800 lb, 20.80; 1000-4900 lb, 19.80; 5000-19,900 lb, 18.80; 20,000 lb or more, 17.60.

Sodium Stannate: Less than 100 lb, 79.50; 100-600 lb, 70.20; 700-1900 lb, 67.40; 2000-9900 lb, 65.60; 10,000 lb or more, 64.20.

Stannous Chloride (Anhydrous): 25 lb, 155.00; 100 lb, 150.10; 400 lb, 147.70; 800-19,900 lb, 106.80; 20,000 lb or more, 100.70.

Stannous Sulphate: Less than 50 lb, 140.20; 50 lb, 110.20; 100-1900 lb, 108.20; 2000 lb or more, 106.20.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 115*)

weaker due to pending negotiations with Japanese buyers, who are said to be planning reduced purchases for the fourth quarter. They are reported negotiating lower prices. The Japanese bought 85 cargoes for the current quarter and are reported to be negotiating for only 60 for the coming three months.

The freight market has strengthened, with shipowners asking $67,000, free load and discharge, for 9500 ton cargoes compared with $60,000 to $62,000 last quarter.

Tubular Goods . . .

Tubular Goods Prices, Page 110

Things are looking up in the steel pipe market, says Roger Blough, chairman, U. S. Steel Corp. Reason: The Federal Power Commission's approval of some big pipeline projects. U. S. Steel, a major pipemaker, and others in the industry have been hit by severe foreign competition, especially from Germany.

The number of rotary oil rigs in operation in the U. S. and Canada in the latest week rose to 1882, up 20, reports Hughes Tool Co. Of the total, 1710 rigs are operating in this country, an increase of eight, and 172 in Canada, up 12.

Demand for specialty tubing is static. August bookings were about the same as July's, and the outlook for September is no better. Bearingmakers are stepping up their purchases of mechanical tubing, but they're not buying as much steel as had been expected. In pressure tubing, the picture is no better. The product is being bought in small quantities on a quick delivery basis.

Pig Iron . . .

Pig Iron Prices, Page 111

Following the historical pattern, shipments of merchant pig iron showed some gain in August, and they are expected to improve further this month. Consumption is slow, and supplies are more than adequate, with the foundries averaging around four days a week—a schedule that promises to hold for a while after Labor Day, though labor forces may be increased.

Merchant pig iron shipments totaled 240,412 net tons in July, reports the American Iron & Steel Institute. Of the total, 38,405 tons went to ingotmakers, including pro-

CLASSIFIED

IF YOU OPERATE A FURNACE . . . . .

We will purchase your scrap linings, retorts, conveyors, muffles, racks, etc. Any item made of Nickel alloy.

Write, Wire or Call

Weinstein Co.

610 W. 8th St.
Jamestown, N. Y.
Phone 61-154

MOTORS • GENERATORS • TRANSFORMERS

ELECTRIC EQUIPMENT CO.

World's Largest Inventory

Call collect: GL 3-6783
P. O. Box 51 Rochester 1, N. Y.

FOR SALE

120 lbs. Swedish Blued Clock Spring Steel Ribbon, .004 x ¼", $4.00 lb.

Walter Spatz, Spatz Laboratories
1032 Broadway Santa Monica, Calif.
EX 3-9711

FOR SALE

Available for immediate sale, 40,000 square feet cast iron floor plating, 2' x 3' x 1".

ALBANY CAR WHEEL CO., INC.
P. O. Box 625 Albany, N. Y.

HELP WANTED

Manufacturer of Tension and Heavy Duty Steel Strapping requires a distributor on commission basis. Must have had previous experience in the selling of this product. All applications will be kept confidential. Attractive proposition for those who can qualify.

Please reply to:

Box 866, STEEL
Penton Bldg. Cleveland 13, Ohio

Help Wanted

CHIEF DRAFTSMAN—ASSISTANT CHIEF ENGINEER Wanted by structural steel shop. Minimum 10 years experience. Location, Sacramento, California. Excellent opportunity for a good dependable man. $700 to $800 per month depending on qualifications. Submit resume of education and experience to Box 869, STEEL, Penton Bldg., Cleveland 13, Ohio.

SENIOR SALES ENGINEER
Broad experience in sales of major hydraulic components to steel and equipment industries. Must be able to represent Company at top engineering and purchasing levels. Positions open in the Cleveland and Pittsburgh area. Some travel required. Age 35 to 50. Salary $10,000 plus. A fine growth opportunity. All replies confidential and will be acknowledged. Reply Box 868, STEEL, Penton Bldg., Cleveland 13, Ohio.

FOR CLASSIFIED RATES
And Further information write
STEEL, Penton Bldg., Cleveland 13, O.

35% NICKEL

DURALOY D

15% CHROMIUM

Furnace Castings

Here are two good examples of our work in high-nickel castings!

Heat Treating

These are in the Duraloy HT group calling for Ni 33.37 percent. We've gone as high as 68% nickel on some castings where extremely high temperatures and very severe corrosive conditions had to be resisted. The important factor concerning castings for exceptionally high temperatures is that they must retain their structural form under load.

Carburizing

Knowing just how much nickel to put in and how much chromium and other alloying elements depends to a large extent on experience . . . and it is experience that we can offer you for the castings you need. We've been producing static castings since 1922 and centrifugal castings since 1933, being among the pioneer founders in each class.

If you would care to have our metallurgist study your casting problem, we shall be glad to have you call upon us for the service.

Our New General Catalog is yours for the asking.

HIGH ALLOY CASTINGS

The DURALOY Company

OFFICE AND PLANT: Scottdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.

CHICAGO OFFICE: 332 South Michigan Avenue

DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

ducers of ingot molds and 202,007 to foundries and others. Shipments in the first seven months amounted to 2,546,233 net tons.

Distributors . . .

Prices, Page 111

Steel service center operators anticipate a more substantial increase in order volume this month than they did in August. Last month's tonnage barely nosed out July's; in some products, volume fell short of July's. Of all the major products, sheets are moving best, but demand is disappointing.

Competition from imported steel is less severe than it was. A West Coast importer is having a hard time selling a shipment of plates that he brought in months ago. Prices on foreign steel in the Houston area haven't been changed significantly in four months. One distributor reports it's the longest period in two years that prices have held.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

550 tons, factory building, Du Pont interests, Seaford, Del., to Ingalls Iron Works Co., Birmingham.

460 tons, Hanford Works, standby powerhouse, to Isaacson Iron Works, Seattle; Puget Sound Bridge & Drydock Co., Seattle, general contractor.

335 tons, office and warehouse, Elizabethtown Consolidated Gas Co., Woodbridge, N. J., through Ebasco Services, New York, engineer, to unnamed fabricator.

110 tons, addition, PVC resin plant reactor, Firestone Plastics Co., Pottstown, Pa., to Mayer Pollock, Pottstown.

STRUCTURAL STEEL PENDING

8000 tons, Queens central repair shops, New York Department of Public Works, New York; Nelnick Construction Co. low on the general contract.

2000 tons, state bridgework, Ulster County, New York; bids closed.

996 tons, section, Long Island Expressway, Suffolk County, New York.

885 tons, section, Sunrise Highway, Suffolk County, New York; bids closed.

850 tons, Mayfield project powerhouse, Isaacson Iron Works, Seattle, sole bidder to Tacoma, Wash.

435 tons, I-beams, supply officer, Naval shipyard, Philadelphia; bids Sept. 6.

430 tons, also unstated tonnage of wire, bolts, etc., repairs to Washington State Hood Canal floating bridge; general contract to Yuba Consolidated Industries Inc., Emeryville, Calif., at $3,445,000.

412 tons, additional requirements for anchorages, Verrazano-Narrows Bridge, New York, for Triborough Bridge & Tunnel Authority, to be placed in connection with general construction contract, on which bids were closed Aug. 31; 10,885 tons of cable anchorage metal work is to be fabricated at the Sun Shipbuilding & Dry Dock Co., Chester, Pa.

150 tons, also reinforcing and steel piling, Missouri River railroad relocation project; bids to the Bureau of Reclamation, Dillon, Mont., Oct. 6.

143 tons, repairs to Magnolia Bridge, Seattle; Willar Construction Co., Seattle, low at $98,886.

100 tons, approximately, state bridgework, Monroe County, Pennsylvania; bids Sept. 16.

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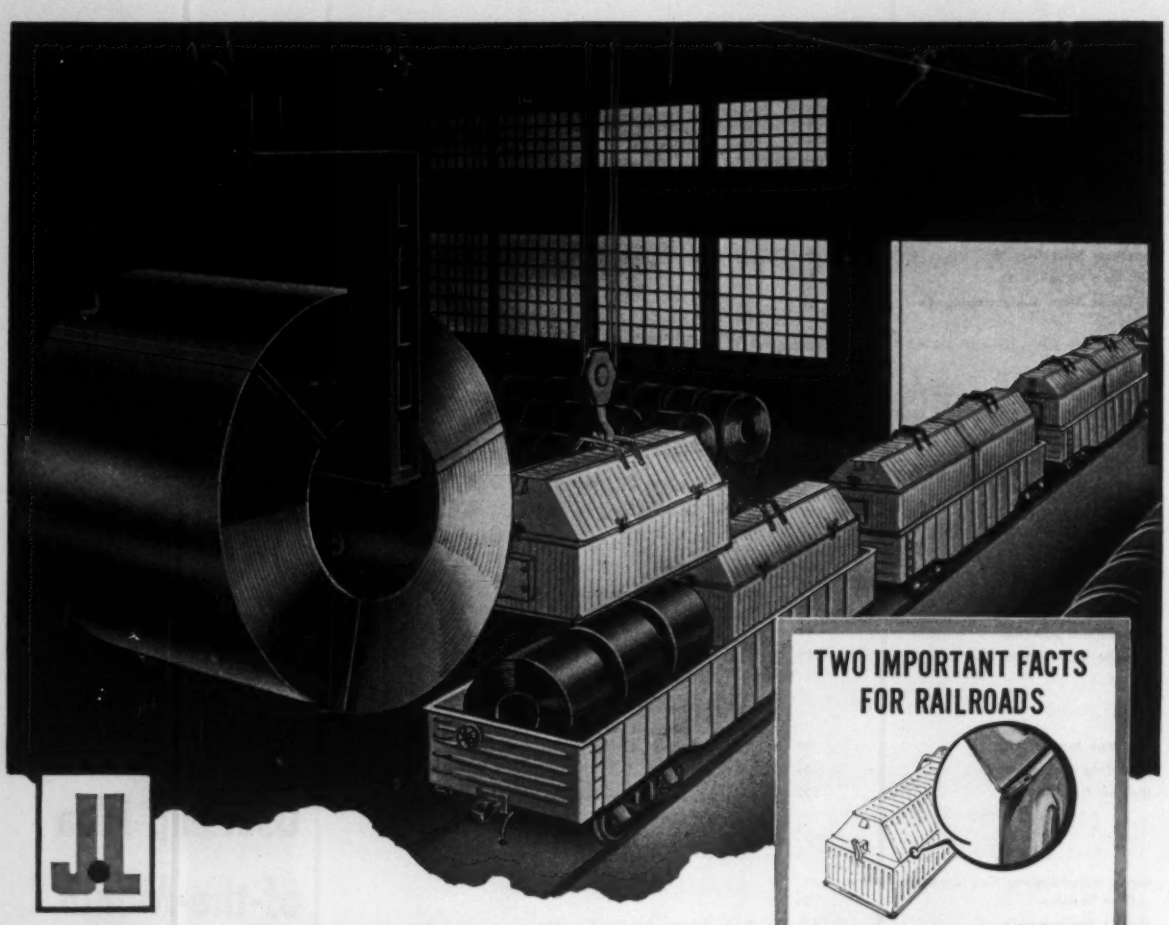
You May Win $1000 By Reading This Issue of STEEL

See Page 5 Servicenter For Details

STEEL's Big Usership-Idea of-the-Month Contest

No Boxtops No Jingles

Just tell us how you use articles or advertisements that you see in STEEL



YOCAR HOODS HELP J & L SOLVE SHIPPING PROBLEMS

Use of Yocar hoods on shipments of high quality steel coils provides savings of "$25 to $30" per car loading according to JONES & LAUGHLIN STEEL CORPORATION, ALIQUIPPA WORKS DIVISION, ALIQUIPPA, PA.

Costly dunnage and paper wrappings are eliminated — damage claims show drastic reduction — and the perfectly balanced YOCAR HOODS permit easy positioning with minimum manpower. Positive protection from weather, dirt and vandalism is also provided.

Helping you **SHIP SAFELY AT A SAVINGS** is YOCAR'S goal. Why not do something about your profit-reducing shipping problems? Specify YOCAR protection next time you ship by rail.

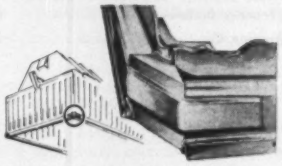
OTHER YOCAR SAFETY DEVICES	**Safe-Cargo Anchor Rails for piggy-back trailers**	**Yocar Safe-Cargo Econo-Guard increases car wall life**
	Yocar 3-section Removable Roofs	**RoLLoK Movable Bulkheads**

YOCAR

YOUNGSTOWN STEEL CAR CORPORATION • NILES, OHIO

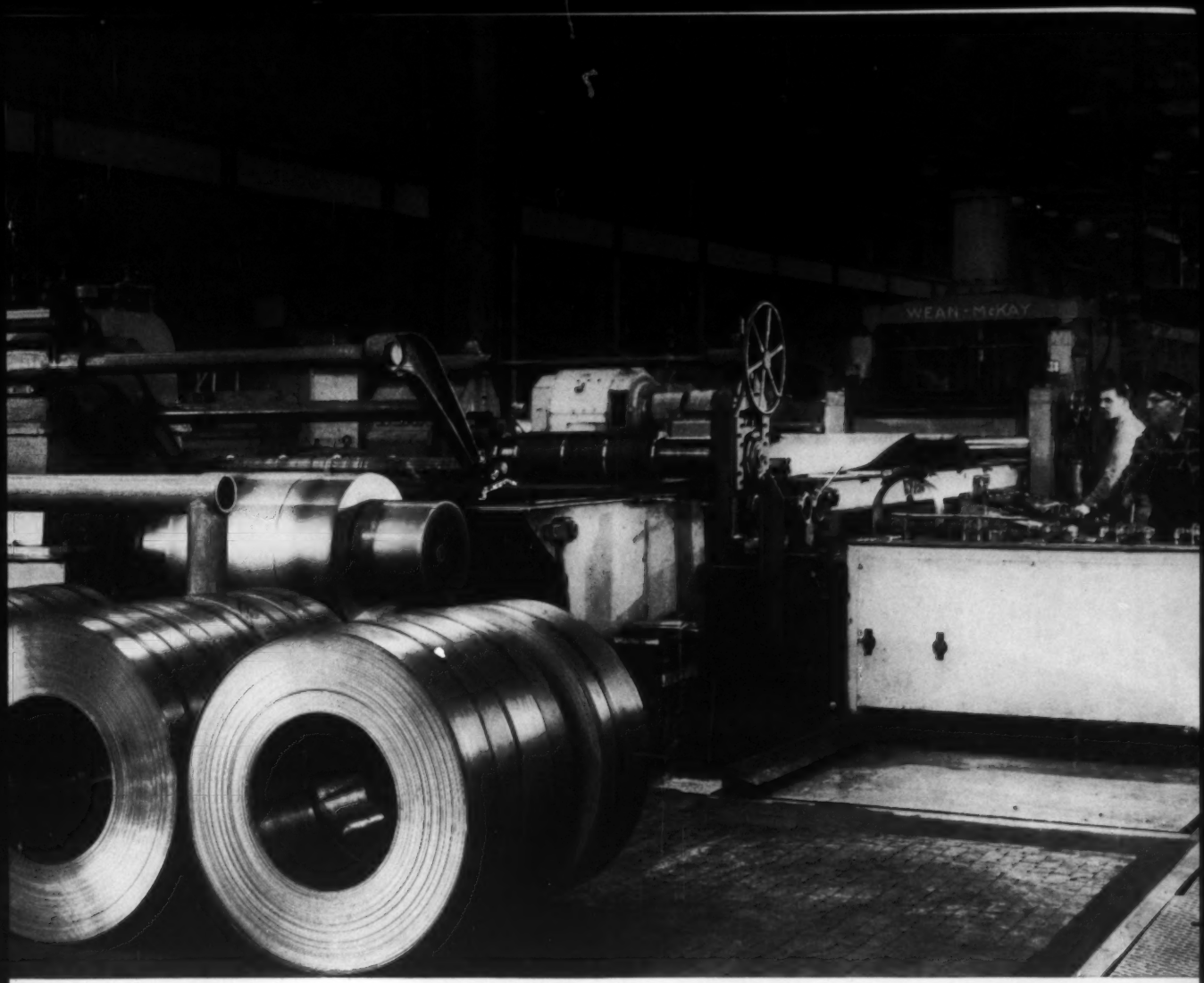
TWO IMPORTANT FACTS FOR RAILROADS

SEAM-LOCK construction eliminates upper welded seams, where water accumulates, insuring weather-tight protection throughout the hood life. Added strength to the entire hood is achieved due to the rigidity and durability of SEAM-LOCK'S design.



CORNER-STRENGTH . . . A new corner construction makes YOCAR hoods the strongest and best constructed hoods available today. Double backing on each corner insures longer service life, for it is here that gondola hoods take the most constant beating from humping and shifting in transit.

Send for new catalog today and see how Yocar can help you solve your shipping problems.



Pittsburgh Steel keeps production costs down with Wean Hot Rolled Strip Slitting Line

Pittsburgh Steel Company maintains a high production rate at its Allenport, Pennsylvania hot strip mill with this heavy duty Wean slitting line. The Wean line allows Pittsburgh Steel to follow the economical practice of rolling wide strip and then slitting it to a variety of customer-specified widths. It not only frees the hot strip mill of production runs with narrow strip, but also enables Pittsburgh to offer a wider range of strip widths.

This line can handle coils up to 60″ O.D., recoiling the slit strands on either 20″ or 24″ expanding mandrels. Strip ranging from 18″ to 60″ in width and .049″ to .188″ in thickness can be side-trimmed and slit at speeds up to 300 fpm. A processing uncoiler "works" the strip to eliminate serious cross-breaks and flattens it to permit accurate slitting.

We would like to suggest that you put Wean's extensive experience to work on your next slitting line project. You will find that in slitting, as in all phases of sheet, strip and tin plate processing, Wean "creative engineering" leads the field in design and construction of modern processing line equipment.

WEAN

THE WEAN ENGINEERING COMPANY, INC. • WARREN, OHIO

YOU CAN'T BUY TODAY'S TOOLS

● The machine tool you paid $10,000 for in 1950 may well cost you over $20,000 if you have to replace it this year. You're getting a better machine with new features, but the main reason for the price increase is *inflation.*

Tax regulations relating to depreciation do not take inflation into account. Archaic regulations force you to make up the price difference out of profits. The net result is that the percentage of obsolete equipment in American industry is growing every year—an estimated 50% in 1959.

Some European countries have an obsolescence of only 10%. The advantage this gives them in competing in world markets is obvious. You need only glance at International export-import figures to see that other countries are pushing their advantage hard and shutting out American manufacturers in market after market.

The governments of other countries are helping their industries maintain and upgrade productive facilities. Federal taxation in the United States is working to hold back the efficiency and capacity of our industries.

We urge that you make known your support for modern depreciation allowances. Action is needed now. We urge you to keep your employees informed about their stake in helping American industry compete in world markets. We all have a stake—employees in greater job security and more job opportunities, your company and ours in being competitive and in assuring future growth of the economy. Let's all join forces now to get action.

The Timken Roller Bearing Company
Canton 6, Ohio

AT YESTERDAY'S PRICE TAG